

**DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR**

**PROJECT TITLE: TANK WASTE REMEDIATION SYSTEM VADOSE ZONE
CHARACTERIZATION**

Date Approved: 31-Dec-02

Emission Unit Name: 200 AREA DIFFUSE/FUGITIVE

Emission Unit ID 486

This is a MAJOR, FUGITIVE, non-point source emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
			Abatement controls as required in the following Conditions and Limitations.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Federal and State Regulatory</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
WAC 246-247-075[3]	Appendix B, Method 114	All radionuclides which could contribute 10% of the potential TEDE.	As listed in the following Conditions and Limitations.

Sampling Requirements: Existing near-facility monitoring stations.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 07/14/1999 Tank Waste Remediation System Vadose Zone Characterization (DOE/RL-99-34 submitted May 1999). Approved by AIR 99-701.
- 08/23/1999 NOC Revision Form approved on August 23, 1999.
- 11/01/1999 NOC Revision Form approved on November 1, 1999.
- 05/11/2000 Tank Waste Remediation System Vadose Zone Characterization, Revision 0 (DOE/ORP-2000-05). Approved via AIR 00-505.
- 05/26/2000 Tank Waste Remediation System Vadose Zone Characterization, Revision 1 (DOE/ORP-2000-05). Approved via AIR 00-515 on May 26, 2000.
- 06/21/2000 Vadose Zone NOC Revision Form approved on June 21, 2000.
- 11/09/2000 NOC Revision Form approved on November 9, 2000 and clarified via AIR 00-1104 on November 17, 2000.
- 03/12/2001 NOC IDs 389, 409, 454, 455, 490 combined into NOC ID 379.
- 06/21/2001 NOC ID 379 obsolete upon receipt of "Tank Waste Remediation System Vadose Zone Characterization, Revision 2" (DOE/ORP-2000-05) received April 16, 2001, approved via AIR 01-606, June 21, 2001. NOC ID 5 issued to reflect the Conditions and Limitations of operation for this project.

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- 11/27/2001 NOC Revision approved November 27, 2001 to change wording in the NOC. Conditions and Limitations, AIR 02-211, mailed on February 26, 2002
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- 06/24/2002 AOP Administrative Amendment approved on June 18, 2002 to clarify HEPA Filter testing requirements. Conditions and Limitations mailed on December 31, 2002 via AIR 02-1232.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 7.03E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 7.03E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**
the following methods of sampling and drilling techniques, including air rotary drilling, sonic drilling, closed-end probe, cable tool drilling, cone penetrometer, air rotary split spoon, and others. This approval applies only to the following tank farms: 241-A, 241-AX, 241-B, 241-BX, 241-BY, 241-C, 241-S, 241-SX, 241-T, 241-TX, 241-TY and 241-U.

Up to ten equivalent boreholes may be drilled or re-entered per year (consecutive 12-month period) by the methods described. An equivalent borehole shall have a nominal top diameter of no larger than ten inches for the first 50 feet, and a nominal bottom diameter of no larger than eight inches for the remaining 200 feet of pipe (average depth is 250 feet). Additionally, an equivalent borehole shall contain a contaminated layer no more than 20 feet long in the ten inch portion of the equivalent borehole. Individual methods shall be selected based on the likely level (concentration) of contaminants to be encountered. The most conservative drilling approach (lowest potential-to-emit) shall be applied first. Borehole logging shall be used to determine when it is appropriate to apply drilling techniques that may have a higher potential-to-emit. Zones not sampled during advancement of the borehole due to having a high potential to exceed exposure guidelines may be sampled by side-wall sampling techniques as the boreholes are decommissioned.

Samples from air rotary type drilling shall be obtained from the sampling sock located on the side of the cyclone and/or from the drums underneath the cyclone and torit. The material in the drums will be sampled by pulling a mini-core from the drum. Sampling and change-out of the drums shall be performed inside the containment structure with continuous health physics technician (HPT) coverage.

Borehole drilling techniques that may be used are limited to those described below:

Sonic drilling
Closed-end probe

Traditional cable tool drilling from top to bottom
Cone Penetrometer
Geo Probe
Auger drilling

Soil sampling techniques will include one or a combination of the following techniques:

Air Rotary Split Spoon
Cable Tool
Cable Tool and Auger with a Split Spoon Core Barrel
Sonic Core Barrel and Split Spoon
Rotary Coring
Sidewall Sampling
Drive Split-Spoon Sampler

Sidewall samples being brought to the surface will be bagged or sleeved into plastic or other suitable container (e.g. shielded container) after retrieval if decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 disintegrations per minute (dpm) per 100 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha. The sampler will then be packaged in a container suitable for shipment to the laboratory for analysis. Other sidewall sampling techniques may involve a lever-action sampler (the sampler is driven into the formation through a cantilever action) or a rotating formation shaving device with the sample captured in an under-slung basket.

The brush, used to clean casings, shall be placed in plastic sleeving if decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha when it is removed from the borehole. Pull the casing into plastic sleeving during removal if decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha. Unthread the casing if possible, or cut using a wheel cutter, or disconnected from other segments into a nominal length of ten feet. A high-speed blade wheel cutter is not allowed. When necessary, either to accomplish casing removal for borehole decommissioning or to enable pull-back for sidewall sampling, the casing will be cut at depth using a Bowen casing cutter (or equivalent). If decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha and the casing is sleeved in plastic, no more than one foot of casing shall be exposed to air during the cutting process. Capture cuttings in draped plastic. If decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha, cap the pieces, cut with plastic or horsetail the sleeving and place sections in a burial box. The hole will be backfilled with clean (nonradioactive) materials (e.g., granular bentonite and/or grout). Casing removal activities are allowed to be performed outside of the containment structure. The closure of the equivalent boreholes may also be performed by backfilling the borehole using a tremie without pulling the casing.

Collect any perched water in the drum at the bottom of the cyclone. Approximately 1,000 gallons of purgewater is allowed to be removed from each equivalent borehole prior to inserting a screen below the water table. After installation of the screen, groundwater samples will be taken. An average of 2,000 gallons of water (which includes perched water, purgewater and groundwater sampling) is allowed to be removed from each equivalent borehole. Perched water and purgewater will be collected in passively ventilated open-top containers. Water shall be transferred from the passively ventilated containers into a

tanker truck for treatment at the 200 Area Effluent Treatment Facility or other permitted storage/treatment facility. Water may be transferred directly from the borehole to the tanker truck, bypassing the intermediate containers.

Approximately 3,500 ft³ of soil may be excavated per year. Perform excavation using manual methods, backhoe, and/or the Guzzler.

4) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	4.55E-04	Am - 241	3.48E+01	Am - 243	7.75E-04
C - 14	2.13E-01	Cm - 242	2.72E-01	Cm - 243	9.47E-03
Cm - 244	8.83E-02	Co - 60	9.66E-01	Cs - 134	1.48E-02
Cs - 137	1.85E+03	Eu - 152	4.13E-01	Eu - 154	8.67E+00
Eu - 155	2.61E+01	H - 3	7.68E-01	I - 129	1.72E-02
Ni - 59	5.13E-01	Ni - 63	4.99E+01	Np - 237	3.55E-03
Pa - 231	4.72E-04	Pu - 238	2.20E+00	Pu - 239	2.00E+02
Pu - 240	2.11E+01	Pu - 241	1.25E+02	Pu - 242	5.98E-04
Ra - 226	3.69E-05	Ra - 228	1.92E-03	Ru - 106	1.71E-03
Sb - 125	7.25E-01	Sm - 151	1.86E+02	Sn - 126	7.97E-02
Sr - 90	2.07E+04	Tc - 99	3.55E+00	Th - 229	7.76E-05
Th - 232	7.60E-05	U - 232	5.87E-03	U - 233	2.25E-02
U - 234	4.45E-01	U - 235	1.97E-02	U - 236	4.55E-03
U - 238	4.48E-01	Y - 90	2.07E+04	Zr - 93	2.41E-01

- 5) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 6) U.S. DOE shall monitor this project or emission unit as follows: fugitive emissions result from cable tool and sonic drilling, use of the closed end probe and the cone penetrometer, the plastic containment structure during air rotary drilling, and during dismantlement/assembly or relocating the ventilation equipment, plastic containment structure, or process equipment. To confirm low emissions, periodic confirmatory monitoring will be accomplished by operating three fixed head samplers around the location of where the drilling and sampling operations are occurring. The fixed head samplers will be located within 100 feet of where the drilling and sampling work activities are occurring and will be operated whenever the work activities have the potential-to-emit radionuclides. These samples shall be composited for each three individual sites (total of three samples) and analyzed at the end of each borehole. Packaging of equipment and samples for shipment, shall have surveys (swipes for removable contamination) performed in accordance with TWRS as low as reasonably achievable control technology (ALARACT) demonstration number 12 and subsequent revisions, TWRS ALARACT Demonstration for Packaging and Transportation of Equipment & Vehicles.

Fugitive emissions may also result from removing casing from the ground. To confirm low emissions, periodic confirmatory monitoring will be accomplished by operating three fixed head samplers around the location of the work activities. The fixed head samplers shall also be located with 100 feet of where the casing removal activities are occurring and shall be operated when the work activities have the potential-to-emit radionuclides. These samples shall be composited for each three individual sites (total of three samples) and analyzed at the end of each casing removal (WAC 246-247-075(8)).

- 7) This NOC becomes obsolete on July 15, 2019.
- 8) The facility shall notify the department at least seven days prior to any planned preoperational testing

- of the emission units emissions control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 9) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
 - 10) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from this unit (WAC 246-247-075(13)).
 - 11) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
 - 12) The Department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
 - 13) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
 - 14) **This condition was obsoleted on 02/25/2002.** When this project is completed, or operations cease, the facility shall notify the department via a report of closure, including whether or not any potential for airborne release occur (WAC 246-247-080(6)).
Condition/Limitation added via AIR 99-701, July 7, 1999. Obsoleted to reflect current sunset language via AIR 02-211. Replaced with current standard condition via AIR 02-1232 dated December 31, 2002.
 - 15) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
 - 16) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
 - 17) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
 - 18) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
 - 19) The facility must maintain a log in an approved format for this activity or emission unit (WAC 246-247-080(7)).

- 20) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 21) Emissions for these activities shall be tracked via a log approved by the department. This log shall track the hours of operation and location of use for each type of equipment, estimated and calculated curies encountered, and calculated emissions. Air samples used for periodic confirmatory measurement shall be collected no closer than three feet above ground level. These samples shall be composited for each three individual sites (total of three samples) and analyzed at the completion of the borehole or re-entry activity and casing removal. All periodic confirmatory samples will be collected and analyzed following EPA Method 114.
- 22) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 23) The following controls shall be mandatory when handling perched water, ground water and ground water sampling. All contaminated liquids shall be contained; all exterior surfaces of liquid holding devices shall be maintained at the current radiological free release limit; vented drums shall be maintained non-smearable; storage and handling of the vented drums shall be as described in the Site Wide Vented Drum Notice of Construction.
- 24) No more than an average of 2,000 gallons of water (includes perched water, purge water and groundwater sampling) will be removed from each equivalent bore hole. Not to exceed 20,000 gal/year of water. Perched water and purge water will be collected in passively ventilated open top containers. When a sufficient volume of water has been collected or at the end of groundwater sampling activities, the water shall be transferred from the passively ventilated containers into a tanker truck for treatment at the 200 Area ETF or other permitted storage/treatment facility.
- 25) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 26) The following additional drilling techniques are approved for use: geoprobe and auger drilling. For casing removal or to enable pull back for sidewall sampling, the casing may be cut at depth using a Bowen Casing Cutter (or equivalent with prior DOH approval).
- 27) Approval is given as an alternative to transfer the perched water directly from borehole to the tanker.
- 28) For various characterization options covered under this NOC, the maximum TEDE to the hypothetical off site MEI shall not exceed 7.03 E-02 mrem/year. The maximum TEDE to the MEI shall not exceed 5.7 E-02 mrem/year at the Energy Northwest location as determined by CAP88PC, Version 2 supplied as supporting documentation.
- 29) No more than 3,500 cubic feet of soil may be excavated per year using manual methods, backhoe, and/or the guzzler. This shall be documented on an approved log.
- 30) U.S. DOE shall provide additional monitoring as follows: Fugitive emissions result from excavations using hand tools shall be described as described in TWRS ALARCT 5. Fugitive emissions that result from excavations using backhoe shall consist of the following:
- a) HPT coverage will be performed as specified in the radiological permit.
 - b) A beta-gamma survey of the ground surface is required prior to excavation in Contamination Areas (CA's), High Contamination Areas (HCA's), Soil Contamination Areas (SCA's), and Underground Radioactive Materials Areas (URMA's). An alpha survey may be required prior to excavation per the

"Justification for Dual Survey Exemption in Tank Farm Facilities" HNF-3391.

- c) For excavations in CA's, HCA's, SCA's, and URMA's, if beta-gamma activity greater than 1000 dpm/probe area (5000 dpm/100 cm²) is identified, alpha surveys will also be performed.
- d) Suppressants such as water, fixatives, covers, or windscreens will be used as necessary, including at the end of each shift or when sustained or predicted winds are >20 mph. Excavations are not allowed when sustained or predicted winds will be >20mph.
- e) If the net alpha for the general area is greater than 140 dpm/probe area, OR if the net beta-gamma activity for the general area is greater than 500,000 dpm/probe area, work will be suspended and worker safety evaluated by radiological control. Direct contact will also be made to WDOH. After it is determined that there is no threat to worker safety, WDOH has been contacted, and the proper controls (e.g., water fixatives, covers, windscreens) have been put in place, excavation may continue. A contact of WDOH will not be needed if the contamination consists of a hot speck. If hot specks are detected during the radiological surveys, the speck will be removed and contained before the activity is allowed to continue unless located in the bottom of the trench after excavation has been completed. Specks found in the bottom of the completed trench may be covered with clean fill. A hot speck will be defined as a very small amount (i.e., less than or equal to 100 cm²) of contamination reading greater than or equal to 1,000,000 dpm/probe size beta-gamma and/or greater than or equal to 490 dpm/probe size alpha.

- 31) Excavations using the Guzzler shall follow the Conditions and Limitations for approval for the Categorical NOC for use of the Guzzler on the Hanford Site. All source term work performed under this activity shall be tracked against this APQ.
- 32) Casing size reduction may also be by unthreading.
- 33) Drive Split Spoon Sampler will be included as a soil sampling technique.
- 34) The APQ associated with perch water, purgewater and groundwater sampling shall not exceed 7.57 E-03 curies. The APQ associated with excavation shall not exceed 74.9 curies. These shall be tracked and documented on an approved log.
- 35) Emission controls to be used during sonic drilling, cable tool drilling, during use of the cone penetrometer, use of the closed-end probe, and casing removal will be decontamination by nonaggressive manual methods such as wiping, sleeving into plastic or having fixatives applied to prevent the spread of contamination if the smearable contamination levels are greater than 100,000 dpm/100 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha.
As the core barrel is removed from the ground during cable tool drilling, a smear survey will be taken of the core barrel. Decontamination activities will be performed as needed to reduce smearable contamination.
 - a. At selected depths, samples will be taken and these samples will be removed from the core barrel prior to striking the exterior of the core barrel with a hammer or hard object to dislodge soil into a plastic lined drum. There will be minimal potential for emissions from striking the core barrel to dislodge the soil into the drum.
 - b. When the smearable contamination level is greater than 100,000 dpm/100 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha, the core barrel will be sleeved in plastic. The core barrel will be removed from the drill string and placed in a suitable closed container for shipment to the laboratory or placed in a plastic-lined drum.
Additionally, other sample containers may be wrapped in plastic after retrieval and the casing may be sleeved into plastic during the removal process to prevent the spread of contamination.

- 36) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a

report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6)).

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: TANK WASTE REMEDIATION SYSTEM VADOSE ZONE
CHARACTERIZATION**

Date Approved: 31-Dec-02

Emission Unit Name: AIR ROTARY DRILLING

Emission Unit ID 539

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
	HEPA	1	On the containment structure.
	HEPA	1	On the Air Rotary Exhaust.
	HEPA	1	To be used as a record filter on the Air Rotary Exhaust.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Federal and State Regulatory</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Appendix B, Method 114(3)	All radionuclides which could contribute 10% of the potential EDF.	The record filter is to be counted annually (either a destructive or non- destructive technique) using a gamma spectrometer calibrated to Cs-137.

Sampling Requirements: Destructive or non-destructive analysis of the record filter combined with field surveys.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

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06/24/2002 AOP Administrative Amendment approved on June 18, 2002 to clarify HEPA Filter testing requirements. Conditions and Limitations mailed on December 31, 2002 via AIR 02-1232.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 7.03E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 7.03E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

- 3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**

the following methods of sampling and drilling techniques, including air rotary drilling, sonic drilling, closed-end probe, cable tool drilling, cone penetrometer, air rotary split spoon, and others. This approval applies only to the following tank farms: 241-A, 241-AX, 241-B, 241-BX, 241-BY, 241-C, 241-S, 241-SX, 241-T, 241-TX, 241-TY and 241-U.

Up to ten equivalent boreholes may be drilled or re-entered per year (consecutive 12-month period) by the methods described. An equivalent borehole shall have a nominal top diameter of no larger than ten inches for the first 50 feet, and a nominal bottom diameter of no larger than eight inches for the remaining 200 feet of pipe (average depth is 250 feet). Additionally, an equivalent borehole shall contain a contaminated layer no more than 20 feet long in the ten inch portion of the equivalent borehole. Individual methods shall be selected based on the likely level (concentration) of contaminants to be encountered. The most conservative drilling approach (lowest potential-to-emit) shall be applied first. Borehole logging shall be used to determine when it is appropriate to apply drilling techniques that may have a higher potential-to-emit. Zones not sampled during advancement of the borehole due to having a high potential to exceed exposure guidelines may be sampled by side-wall sampling techniques as the boreholes are decommissioned.

Samples from air rotary type drilling shall be obtained from the sampling sock located on the side of the cyclone and/or from the drums underneath the cyclone and torit. The material in the drums will be sampled by pulling a mini-core from the drum. Sampling and change-out of the drums shall be performed inside the containment structure with continuous health physics technician (HPT) coverage.

Borehole drilling techniques that may be used are limited to those described below:

- Sonic drilling
- Closed-end probe
- Traditional cable tool drilling from top to bottom
- Cone Penetrometer
- Geo Probe
- Auger drilling

Soil sampling techniques will include one or a combination of the following techniques:

- Air Rotary Split Spoon
- Cable Tool
- Cable Tool and Auger with a Split Spoon Core Barrel
- Sonic Core Barrel and Split Spoon
- Rotary Coring
- Sidewall Sampling
- Drive Split-Spoon Sampler

Sidewall samples being brought to the surface will be bagged or sleeved into plastic or other suitable container (e.g. shielded container) after retrieval if decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 disintegrations per minute (dpm) per 100 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha. The sampler will then be packaged in a container suitable for shipment to the laboratory for analysis. Other sidewall sampling techniques may involve a lever-action sampler (the sampler is driven into the formation through a cantilever action) or a rotating formation shaving device with the sample captured in an under-slung basket.

The brush, used to clean casings, shall be placed in plastic sleeving if decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha when it is removed from the borehole. Pull the casing into plastic sleeving during removal if decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha. Unthread the casing if possible, or cut using a wheel cutter, or disconnected from other segments into a nominal length of ten feet. A high-speed blade wheel cutter is not allowed. When necessary, either to accomplish casing removal for borehole decommissioning or to enable pull-back for sidewall sampling, the casing will be cut at depth using a Bowen casing cutter (or equivalent). If decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha and the casing is sleeved in plastic, no more than one foot of casing shall be exposed to air during the cutting process. Capture cuttings in draped plastic. If decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha, cap the pieces, cut with plastic or horsetail the sleeving and place sections in a burial box. The hole will be backfilled with clean (nonradioactive) materials (e.g., granular bentonite and/or grout). Casing removal activities are allowed to be performed outside of the containment structure. The closure of the equivalent boreholes may also be performed by backfilling the borehole using a tremie without pulling the casing.

Collect any perched water in the drum at the bottom of the cyclone. Approximately 1,000 gallons of purgewater is allowed to be removed from each equivalent borehole prior to inserting a screen below the

water table. After installation of the screen, groundwater samples will be taken. An average of 2,000 gallons of water (which includes perched water, purgewater and groundwater sampling) is allowed to be removed from each equivalent borehole. Perched water and purgewater will be collected in passively ventilated open-top containers. Water shall be transferred from the passively ventilated containers into a tanker truck for treatment at the 200 Area Effluent Treatment Facility or other permitted storage/treatment facility. Water may be transferred directly from the borehole to the tanker truck, bypassing the intermediate containers.

Approximately 3,500 ft³ of soil may be excavated per year. Perform excavation using manual methods, backhoe, and/or the Guzzler.

4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Ac - 227	6.82E-09	Am - 241	5.22E-04	Am - 243	1.16E-08
C - 14	3.19E-06	Cm - 242	4.08E-06	Cm - 243	1.42E-07
Cm - 244	1.32E-06	Co - 60	1.45E-05	Cs - 134	2.22E-07
Cs - 137	2.77E-02	Eu - 152	6.19E-06	Eu - 154	1.30E-04
Eu - 155	3.91E-04	H - 3	1.15E-05	I - 129	2.58E-07
Ni - 59	7.69E-06	Ni - 63	7.48E-04	Np - 237	5.32E-08
Pa - 231	7.08E-09	Pu - 238	3.29E-05	Pu - 239	3.00E-03
Pu - 240	3.17E-04	Pu - 241	1.87E-03	Pu - 242	8.97E-09
Ra - 226	5.53E-10	Ra - 228	2.87E-08	Ru - 106	2.56E-08
Sb - 125	1.09E-05	Sm - 151	2.79E-03	Sn - 126	1.19E-06
Sr - 90	3.10E-01	Tc - 99	5.33E-05	Th - 229	1.16E-09
Th - 232	1.14E-09	U - 232	8.79E-08	U - 233	3.38E-07
U - 234	6.67E-06	U - 235	2.95E-07	U - 236	6.82E-08
U - 238	6.72E-06	Y - 90	3.10E-01	Zr - 93	3.61E-06

- 5) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 6) This NOC becomes obsolete on July 15, 2019.
- 7) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 8) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 9) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 10) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 11) The department reserves the right to inspect and audit all construction activities, equipment, operations,

documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).

- 12) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 13) **This condition was obsoleted on 02/25/2002.** When this project is completed, or operations cease, the facility shall notify the department via a report of closure, including whether or not any potential for airborne release occur (WAC 246-247-080(6)).
Condition/Limitation added via AIR 99-701, July 7, 1999. Obsoleted to reflect current sunset language via AIR 02-211
- 14) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 15) Periodic confirmatory sampling is required. For the air rotary type drilling this shall consist of a destructive or non-destructive analysis of the record filter combined with radiological field surveys during the work. The record HEPA type filter located downstream shall have a minimum efficiency of 90 percent for particulates with a median diameter of 0.3 microns as specified by the manufacturer. The radiological analyses from the soil samples will be averaged to determine the isotopic distribution of Strontium-90 (Sr-90), Cesium-137 (Cs-137), Plutonium-239 (Pu-239) and Americium (Am-241). The record filter will be counted using a gamma spectrometer calibrated to Cs-137. Counting will be done annually using either a destructive or non-destructive technique.

The soil sample isotope ratios will be applied to Cs-137 on the record filter to confirm low emissions. In addition, the HEPA filter housing shall be field surveyed after the completion of each borehole or re-entry to verify low emissions. Periodic confirmatory monitoring of the passive HEPA type filter will be accomplished by performing a field survey of the filter housing to confirm low emissions. The field survey of the passive HEPA type filter will be performed after the completion of each borehole or re-entry. These methods of performing these "field surveys" shall be submitted to the department for approval (WAC 246-247-075(3)).
- 16) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart II (WAC 246-247-080(2)).
- 17) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 18) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 19) The facility must maintain a log in an approved format for this activity or emission unit (WAC 246-247-080(7)).
- 20) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).

- 21) Emissions for these activities shall be tracked via a log approved by the department. This log shall track the hours of operation and location of use for each type of equipment, estimated and calculated curies encountered, and calculated emissions. Air samples used for periodic confirmatory measurement shall be collected no closer than three feet above ground level. These samples shall be composited for each three individual sites (total of three samples) and analyzed at the completion of the borehole activity and casing removal. All periodic confirmatory samples will be collected and analyzed following EPA Method 114.
- 22) The facility must be able to demonstrate that the workers associated with this emission unit are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
- 23) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 24) For various characterization options covered under this NOC, the maximum TEDE to the hypothetical off site MEI shall not exceed $7.03 \text{ E-02 mrem/year}$. The maximum TEDE to the MEI shall not exceed $5.7 \text{ E-02 mrem/year}$ at the Energy Northwest location as determined by CAP88PC, Version 2 supplied as supporting documentation.
- 25) Emissions from air rotary drilling activities shall be contained using an active ventilation system attached to the process equipment and a passive vent system attached to the process equipment containment structure. The active ventilation system shall have radioactive air emissions abated by one stage of high efficiency particulate air (HEPA) filter. The HEPA filter shall be leak tested using a DOP aerosol as defined in ASME N510 or approved equivalent. The containment structure shall have a passive HEPA type filter that will provide high efficiency collection. The exhaust fan shall have a maximum average velocity of 0.85 cubic meters per second (1,800 cubic feet per minute) with a range of 0.6 to 1.2 cubic meters per second (1,200 to 2,400 cubic feet per minute) to maintain the ducting between the cyclone and the HEPA filter at atmospheric or less than atmospheric pressure. The drill rig shall be sealed to the casing so that particulates will be contained and routed to the process equipment (e.g., cyclone and torit) located inside the plastic containment structure. The flange on the well discharge head and on the inlet of the cyclone shall be double flanged to reduce the potential for an unabated release to the atmosphere. Additionally, the flexible line connecting the well discharge head and the cyclone shall be encased by another flexible line. The flexible encasement line and flanges shall also be vented to the cyclone. The plastic containment structure surrounding the process control equipment shall be fitted with one stage of HEPA type filtration. When the borehole or re-entry has been completed and the process equipment is ready to be removed, equipment shall be broken down at the disconnect points and contaminated equipment openings shall be sealed or plugged to minimize the spread of contamination. All work related to disconnecting and moving the equipment shall be performed in accordance with TWRS as low as reasonably achievable control technology (ALARACT) demonstration number 12 or subsequent revision ALARACT "Demonstration for Packaging and Transportation of Equipment and Vehicles".
- 26) APQ associated with the air rotary drilling shall be tracked and documented on an approved log and subtracted from the APQ listed for the emissions associated with diffuse and fugitive emissions.
- 27) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive

air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6)).

- 28) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: TANK WASTE REMEDIATION SYSTEM VADOSE ZONE
CHARACTERIZATION**

Date Approved: 31-Dec-02

Emission Unit Name: AIR HAMMER DRILLING

Emission Unit ID 541

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT[WAC 246-247-040(4)]
BARCT[WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
	HEPA	1	The HEPA filter may or may not have an exhaust fan associated with it.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Federal and State Regulatory</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Appendix B, Method 114(3)	All radionuclides which could contribute 10% of the potential EDE.	

Sampling Requirements: For passive HEPA filter, perform field survey of the filter housing after each borehole.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 07/14/1999 Tank Waste Remediation System Vadose Zone Characterization (DOE/RL-99-34 submitted May 1999). Approved by AIR 99-701.
- 08/23/1999 NOC Revision Form approved on August 23, 1999.
- 11/01/1999 NOC Revision Form approved on November 1, 1999.
- 05/11/2000 Tank Waste Remediation System Vadose Zone Characterization, Revision 0 (DOE/ORP-2000-05). Approved via AIR 00-505.
- 05/26/2000 Tank Waste Remediation System Vadose Zone Characterization, Revision 1 (DOE/ORP-2000-05). Approved via AIR 00-515 on May 26, 2000.
- 06/21/2000 Vadose Zone NOC Revision Form approved on June 21, 2000.
- 11/09/2000 NOC Revision Form approved on November 9, 2000 and clarified via AIR 00-1104 on November 17, 2000.
- 03/12/2001 NOC IDs 389, 409, 454, 455, 490 combined into NOC ID 379.
- 06/21/2001 NOC ID 379 obsoleted upon receipt of "Tank Waste Remediation System Vadose Zone Characterization, Revision 2" (DOE/ORP-2000-05) received April 16, 2001, approved via AIR 01-806, June 21, 2001. NOC ID 5 issued to reflect the Conditions and Limitations of operation for this project.

Printed on 06 Jan-03

- 11/27/2001 NOC Revision approved November 27, 2001 to change wording in the NOC. Conditions and Limitations, AIR 02-211, mailed on February 26, 2002
- 12/14/2001 AOP Minor Modification, 02-RCA-085, received December 14, 2001 to state that AIR 01-606 replaced all previous Conditions and Limitations. No new Conditions and Limitations issued.
- 03/28/2002 AOP Minor Modification, 02-RCA-0238, received March 28, 2002 to state that AIR 02-211 replaced all previous conditions. No new Conditions and Limitations mailed.
- 05/23/2002 AOP Administrative Amendment received May 23, 2002 to clarify HEPA filter testing requirements. DOH required submittal of AOP Administrative Amendment in the standard form.
- 06/24/2002 AOP Administrative Amendment approved on June 18, 2002 to clarify HEPA Filter testing requirements. Conditions and Limitations mailed on December 31, 2002 via AIR 02-1232.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $7.03E-02$ mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to $7.03E-02$ mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**
the following methods of sampling and drilling techniques, including air rotary drilling, sonic drilling, closed-end probe, cable tool drilling, cone penetrometer, air rotary split spoon, and others. This approval applies only to the following tank farms: 241-A, 241-AX, 241-B, 241-BX, 241-BY, 241-C, 241-S, 241-SX, 241-T, 241-TX, 241-TY and 241-U.

Up to ten equivalent boreholes may be drilled or re-entered per year (consecutive 12-month period) by the methods described. An equivalent borehole shall have a nominal top diameter of no larger than ten inches for the first 50 feet, and a nominal bottom diameter of no larger than eight inches for the remaining 200 feet of pipe (average depth is 250 feet). Additionally, an equivalent borehole shall contain a contaminated layer no more than 20 feet long in the ten inch portion of the equivalent borehole. Individual methods shall be selected based on the likely level (concentration) of contaminants to be encountered. The most conservative drilling approach (lowest potential-to-emit) shall be applied first. Borehole logging shall be used to determine when it is appropriate to apply drilling techniques that may have a higher potential-to-emit. Zones not sampled during advancement of the borehole due to having a high potential to exceed exposure guidelines may be sampled by side-wall sampling techniques as the boreholes are decommissioned.

Samples from air rotary type drilling shall be obtained from the sampling sock located on the side of the cyclone and/or from the drums underneath the cyclone and torit. The material in the drums will be sampled by pulling a mini-core from the drum. Sampling and change-out of the drums shall be performed inside the containment structure with continuous health physics technician (HPT) coverage.

Borehole drilling techniques that may be used are limited to those described below:

Sonic drilling
Closed-end probe

Traditional cable tool drilling from top to bottom
Cone Penetrometer
Geo Probe
Auger drilling

Soil sampling techniques will include one or a combination of the following techniques:

Air Rotary Split Spoon
Cable Tool
Cable Tool and Auger with a Split Spoon Core Barrel
Sonic Core Barrel and Split Spoon
Rotary Coring
Sidewall Sampling
Drive Split-Spoon Sampler

Sidewall samples being brought to the surface will be bagged or sleeved into plastic or other suitable container (e.g. shielded container) after retrieval if decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 disintegrations per minute (dpm) per 100 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha. The sampler will then be packaged in a container suitable for shipment to the laboratory for analysis. Other sidewall sampling techniques may involve a lever-action sampler (the sampler is driven into the formation through a cantilever action) or a rotating formation shaving device with the sample captured in an under-slung basket.

The brush, used to clean casings, shall be placed in plastic sleeving if decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha when it is removed from the borehole. Pull the casing into plastic sleeving during removal if decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha. Unthread the casing if possible, or cut using a wheel cutter, or disconnected from other segments into a nominal length of ten feet. A high-speed blade wheel cutter is not allowed. When necessary, either to accomplish casing removal for borehole decommissioning or to enable pull-back for sidewall sampling, the casing will be cut at depth using a Bowen casing cutter (or equivalent). If decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha and the casing is sleeved in plastic, no more than one foot of casing shall be exposed to air during the cutting process. Capture cuttings in draped plastic. If decontamination or application of fixatives cannot reduce smearable contamination to less than 100,000 dpm/100 cm² for beta/gamma or 2,000 dpm/100 cm² for alpha, cap the pieces, cut with plastic or horsetail the sleeving and place sections in a burial box. The hole will be backfilled with clean (nonradioactive) materials (e.g., granular bentonite and/or grout). Casing removal activities are allowed to be performed outside of the containment structure. The closure of the equivalent boreholes may also be performed by backfilling the borehole using a tremie without pulling the casing.

Collect any perched water in the drum at the bottom of the cyclone. Approximately 1,000 gallons of purgewater is allowed to be removed from each equivalent borehole prior to inserting a screen below the water table. After installation of the screen, groundwater samples will be taken. An average of 2,000 gallons of water (which includes perched water, purgewater and groundwater sampling) is allowed to be removed from each equivalent borehole. Perched water and purgewater will be collected in passively ventilated open-top containers. Water shall be transferred from the passively ventilated containers into a

tanker truck for treatment at the 200 Area Effluent Treatment Facility or other permitted storage/treatment facility. Water may be transferred directly from the borehole to the tanker truck, bypassing the intermediate containers.

Approximately 3,500 ft³ of soil may be excavated per year. Perform excavation using manual methods, backhoe, and/or the Guzzler.

4) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	2.02E-06	Am - 241	1.55E-01	Am - 243	3.45E-06
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Eu - 155	1.16E-01	H - 3	3.42E-03	I - 129	7.64E-05
Ni - 59	2.28E-03	Ni - 63	2.22E-01	Np - 237	1.58E-05
Pa - 231	2.10E-06	Pu - 238	9.77E-03	Pu - 239	8.91E-01
Pu - 240	9.40E-02	Pu - 241	5.56E-01	Pu - 242	2.66E-06
Ra - 226	1.64E-07	Ra - 228	8.52E-06	Ru - 106	7.60E-06
Sb - 125	3.23E-03	Sm - 151	8.29E-01	Sn - 126	3.54E-04
Sr - 90	9.19E+01	Tc - 99	1.58E-02	Th - 229	3.45E-07
Th - 232	3.38E-07	U - 232	2.61E-05	U - 233	1.00E-04
U - 234	1.98E-03	U - 235	8.76E-05	U - 236	2.02E-05
U - 238	2.00E-03	Y - 90	9.19E+01	Zr 93	1.07E-03

- 5) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 6) This NOC becomes obsolete on July 15, 2019.
- 7) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 8) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 9) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 10) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 11) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 12) The facility shall make available, in timely manner, all documents requested by the department for

review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

- 13) **This condition was obsoleted on 02/25/2002.** When this project is completed, or operations cease, the facility shall notify the department via a report of closure, including whether or not any potential for airborne release occur (WAC 246-247-080(6)).

Condition/Limitation added via AIR 00-515, November 17, 2000. Obsoleted to reflect current sunset language via AIR 02-211

- 14) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 15) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 16) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 17) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 18) The facility must maintain a log in an approved format for this activity or emission unit (WAC 246-247-080(7)).
- 19) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 20) Emissions for these activities shall be tracked via a log approved by the department. This log shall track the hours of operation and location of use for each type of equipment, estimated and calculated curies encountered, and calculated emissions. Air samples used for periodic confirmatory measurement shall be collected no closer than 3 ft above ground level. These samples shall be composited for each three individual sites (total of three samples) and analyzed at the completion of the borehole activity and casing removal. All periodic confirmatory samples will be collected and analyzed following EPA Method 114.
- 21) The facility must be able to demonstrate that the workers associated with this emission unit are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
- 22) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 23) Approval is given to use a downhole air hammer to drive a sampler while using a closed end probe.
- 24) Operation of the passive or active ventilation unit during the operation of the air hammer shall be documented on an approved log.

- 25) Emissions associated with the downhole air hammer will be routed to a passive or active ventilated HEPA filter. Pressure gauges will be installed on the emissions unit and will be monitored and recorded daily during operation of the downhole air hammer. Operation in the passive mode will not be allowed if the HEPA inlet pressure exceeds 20 inches water gauge and differential pressure exceeds 5.9 inches water gauge. Operation in the active ventilation mode will not be allowed if the HEPA inlet pressure exceeds 20 inches water gauge and differential pressure exceeds 5.9 inches water gauge. The flow shall not exceed the HEPA filter manufactures recommendation. Emissions from the drill rig shall be minimized using a double gasket seal and a chromed casing. This area shall be smear surveyed at the beginning and end of the work cycle and documented to determine adequacy of seal.
- 26) Periodic confirmatory sampling is required. For the air hammer method, instead of air sampling near the HEPA as described in the NOC, this shall consist of a destructive or non-destructive analysis of the HEPA filter combined with radiological field surveys during the work. The HEPA type filter located downstream of the process equipment shall be leak tested using a DOP aerosol as defined in ASME N510 or approved equivalent. The radiological analyses from the soil samples will be averaged to determine the isotopic distribution of Strontium-90 (Sr-90), Cs-137, Plutonium-239 (Pu-239), and Americium (Am-241). The record filter will be counted using a gamma spectrometer calibrated to Cs-137. Counting will be done annually using either a destructive or non-destructive technique.
- 27) The emission unit shall be inspected daily during operation and after any relocations. Line pressure tests will be performed on the line between the well head and the filter and/or fan prior to deploying the air hammer. Line pressure tests will be performed in accordance with ASME/ANSI N510.
- 28) For various characterization options covered under this NOC, the maximum TEDE to the hypothetical off site MEI shall not exceed $7.03 \text{ E-}02 \text{ mrem/year}$. The maximum TEDE to the MEI shall not exceed $5.7 \text{ E-}02 \text{ mrem/year}$ at the Energy Northwest location as determined by CAP88PC, Version 2 supplied as supporting documentation.
- 29) APQ associated with the air hammer operation shall not exceed 195 curies. This shall be tracked and documented on an approved log and subtracted from the APQ listed for the emissions associated with diffuse and fugitive emissions.
- 30) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6)).

- 31) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR
PROJECT TITLE: PURGEWATER MODUTANKS

Emission Unit Name: PURGEWATER MODUTANKS

Emission Unit ID 465

This is a MINOR, FUGITIVE, non-point source emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: None

ALARACT [WAC 246-247-040(4)]
BARGT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
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Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	Air - every 2 weeks continuous/deposition - annually

Sampling Requirements: Environmental sampling

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

08/27/1991 Original approval via AIR 91-803 on August 27, 1991.

01/06/1999 NOC Modification submitted through meeting minutes for July 9, 1998. Approval given via AIR 99-101 on January 8, 1999.

04/29/1999 Meeting Minutes for clarification of conditions submitted April 7, 1999 and approved on April 29, 1999.

08/15/2002 AIR 02-1233, mailed on December 31, 2002 to update Conditions and Limitations to meet Department standards.

09/12/2003 Conditions and Limitations, AIR 03-1201, mailed on December 8, 2003 to reflect current appeal language agreed upon on September 12, 2003.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 1.50E-04 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).
- 3) **This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.**

Solar evaporation of Hanford Site purgewater. Purgewater is excess groundwater and other liquids such as drilling fluids and groundwater slurries associated with groundwater activities. It includes liquids generated during groundwater related activities, including but not limited to the following: well drilling, well development, aquifer testing, groundwater sampling and monitoring, well maintenance and decommissioning, decontamination of well drilling and sampling equipment, and groundwater treatability studies.

The RL will collect purgewater that contains radionuclides (and/or chemical constituents) in concentrations above established collection criteria and will discharge to the soil any purgewater containing constituents in concentrations lower than the collection criteria. At this time, collected purgewater is stored in the 600 Area Purgewater Storage and Treatment Facility (600 PSTF).

Waste Inventory

There are presently two 1,000,000-gallon purgewater containment units in the 600 PSTF. Up to four additional units of comparable size may be added to the 600 PSTF, although there are currently no plans for construction of the additional units. If the contained purgewater is allowed to undergo solar evaporation, up to 850,000 gallons of purgewater could evaporate annually from each storage unit.

Purgewater samples are analyzed on a regular basis for chemical and radionuclide contamination. Using a sample history since January 1, 1989 from wells, maximum values were assigned for radionuclide content and concentration in purgewater stored in the 600 PSTF. From these waste inventory values, a radionuclide source term was developed for purgewater that will be evaporated from the 600 PSTF.

Controls will be implemented to minimize wind suspension of any potentially radioactively contaminated solids that may settle to the bottom of the storage units, thus minimizing the dose potential of particulates. Several options include the use of aerodynamic covers and/or the maintenance of a minimum required liquid level in each unit that has stored purgewater.

- 4) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is $1.50\text{E-}04$ mrem/year. Approved are the associated potential release rates (Curies/year) of:

Alpha-0	2.83E-07	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
B/G -0	7.39E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(a)

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am -241	Be -7	C -14
Co -58	Co -60	Cs -134
Cs -137	Eu -152	Eu -154
Eu -155	Fe -59	H -3
I -129	K -40	Ni -63
Pu -238	Pu -239/240	Ra -226
Ru -106	Sb -125	Sn -125
Sr -89/90	Sr -90	Tc -99
U -234	U -235	U -238

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEL, or greater than 25% of the TEDE to the MEL after controls. WAC 246-247-110(9). DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

- 5) Controls will be implemented to minimize wind suspension of any potentially radioactively contaminated solids that may settle to the bottom of the storage units.
- 6) **This condition was obsoleted on 9/12/2003.** These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

NOC Modification approval given via AIR 99-101 on January 8, 1999. Condition updated to reflect current standard condition via AIR 02-1233 dated December 31, 2002. Obsoleted by appeal language agreed upon on September 12, 2003

- 7) **This condition was obsoleted on 12/26/2002.** This approval, with its Conditions and Limitations, constitutes an amendment to the Department's Radioactive Air Emission License. This amendment must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(e) and (2)(c)).

NOC Modification approval given via AIR 99-101 on January 8, 1999. Obsoleted by issuance of the Hanford Site Air Operating Permit.

- 8) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 9) All facilities must be able to demonstrate the reliability and accuracy of the radioactive air emissions monitoring data (WAC 246-247-075(13)).
- 10) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 11) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 12) The facility shall file a report of closure with the department whenever operations producing emissions of radioactive material are permanently ceased at any emission unit (except temporary emission units) regulated under this chapter. The closure report shall indicate whether, despite cessation of operations, there is still a potential for radioactive air emissions and a need for an active or passive ventilation system with emission control and/or monitoring devices. If decommissioning is planned and will

constitute a modification, a NOC is required, as applicable, in accordance with WAC 246-247-060. (WAC 246-247-080(6))

- 13) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-040(5) and WAC 246-247-060(5)).
- 14) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 15) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 16) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 17) Purgewater tank controls will be implemented to minimize wind suspension of radioactive solids that may settle to the bottom of the storage tank. They include the use of aerodynamic covers and/or maintenance of a minimum liquid level in each unit. Solids that have settled to the bottom will be wetted to minimize wind suspension. This meets the minimum liquid level requirement.
- 18) The maximum impact for the six evaporation units shall be 1.5E-04 millirem per year.
- 19) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 20) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 21) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 22) The facility shall notify the department within twenty-four hours of any shutdown, or of any transient abnormal condition lasting more than four hours or other change in facility operations which, if allowed to persist, would result in emissions of radioactive material in excess of applicable standards

or license requirements (WAC 246-247-080(5)).

- 23) Diffuse/Fugitive emissions shall be monitored using the 200 Area near-field ambient air monitors. Sample collection and analysis shall follow that of the near field monitoring program. Analytical results shall be reported in the Annual Air Emissions Report. Any change to this near-field ambient monitoring program must be approved by the department.
- 24) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR
PROJECT TITLE: 222-S LAB HOT CELL EXPANSION

Date Approved: 13-Dec-02

Emission Unit Name: 296-S-21

Emission Unit ID 254

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT

ALARACT [WAC 246-247-040(4)]

BARCT [WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
222-S Lab Hot Cells	HEPA	3	In series for both the primary and backup exhaust systems
222S Lab Complex	HEPA	1	For both primary and backup exhaust systems
Primary Exhaust	Fan	3	In parallel, serves both hot cell addition & main lab.
Backup Exhaust	Fan	1	Operates independently or in parallel with primary exhaust

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.**This emission unit has the following Monitoring and Sampling Requirements:**

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Federal and State Regulatory</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	(4) 1 week samples/ year

Sampling Requirements: Record SampleAdditional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.**Change History**

02/28/1992 Original NOC approved February 28, 1992 via AIR-Fcb11.

04/12/1994 A post-construction inspection was conducted on March 29, 1994 and a condition was added via AIR 94-405 on April 12, 1994.

08/15/2002 AIR 02-1211, mailed on December 13, 2002 to update Conditions and Limitations to meet Department standards.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 6.60E-03 mrem/year to the

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2) Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 6.00E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**

the Environmental Hot Cell Expansion to provide a new addition to the 222-S Laboratory. This expansion will provide a seven compartment hot cell to support the increased demand for analytical services.

Emissions from the hot cell will be exhausted through the existing stack at the 222-S Facility (registered stack number 296-S-21). Approximately 1200 cubic feet per minute will be emitted from the hot cell. Prior to being emitted to the atmosphere, the hot cell exhaust shall pass through two sets of existing High-Efficiency Particulate Air (HEPA) Filters (double HEPAs at both the 222-SC and 222-SB Facilities), in addition to one of the three new single-stage HEPA filters adjoining the hot cell. HEPA Filters are tested in place to ensure that they remove at least 99.5 percent of particles ranging in size from 0.1 micron to 3.0 microns, with a mean particle size of 0.5 micron.

The hot cell will examine both solid and liquid samples; approximately 43 samples/month will be solids, and approximately 12 samples/month will be liquid. Each solid sample will weigh up to 625 g, with a maximum specific gravity of 5.0. Each liquid sample will be approximately 125 ml. It was assumed that the specific gravity would be 2.0. Each of the samples (both liquid and solid) will have a maximum radionuclide concentration of 2000 uCi/g Sr-90 and 1000 uCi/g Cs-137. Based on these assumptions, the annual solid inventory for the hot cell is 645 Ci Sr-90 and 322.5 Ci Cs-137, and the annual liquid inventory is 72 Ci Sr-90 and 36 Ci Cs-137.

4) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Cs 137	3.59E+02	Sr 90	7.17E+02
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5) The source term shall not exceed 7.84E-2 curies of SR-90 and 3.92E-2 curies of CS-137. If the project exceeds this projected source term, additional notification will be required.

6) **This condition was obsoleted on 12/10/2002.** HEPA filters shall be tested in place to ensure that they remove at least 99.95 percent of particles ranging in size from 0.1 micron to 3.0 micron.

Obsoleted by standard process description.

7) Exhaust air shall pass through existing HEPAs in the 222-SC and 222-SB facilities prior to discharge to the atmosphere.

8) **This condition was obsoleted on 3/29/1994.** Prior to operation, an inspection will be required. After receiving a schedule for the project, DOH will schedule an inspection of the monitoring system and control equipment in the lab.

9) **This condition was obsoleted on 7/8/1999.** The department shall be informed of the results of the testing and balancing and notified before the start up and operation of the hot cells. Verbal notification is acceptable.

Condition added via AIR 94-406, dated April 12, 1994

10) **These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).**

- 11) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 12) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 13) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 14) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 15) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 16) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 17) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 18) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 19) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 20) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 21) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 22) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

- All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))
- 23) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 24) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 25) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: PLUTONIUM FINISHING PLANT LOW-LEVEL WASTE TREATMENT
FACILITY**

Date Approved: 13-Dec-02

Emission Unit Name: 296-Z-15

Emission Unit ID: 387

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT

ALARACT[WAC 246-247-040(4)]
BARCT[WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
	Prefilter	1	
	HEPA	1	
	Fan	1	

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Federal and State Regulatory</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
40 CFR 61.93[b][4][i] & WAC 246-247-075[3]	Appendix B, Method H4(3)	TOTAL ALPHA	One 4 week period per year

Sampling Requirements: Record Sample

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

09/06/2002 AIR 02-1212, mailed on December 13, 2002 to update Conditions and Limitations to meet Department standards.

09/06/2002 Original approval via AIR 92-710 dated July 30, 1992.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 4.90E-08 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 9.70E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 3) No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:

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the new liquid low level waste treatment facility (LLWTF) designed to remove any radionuclides that may have entered the wastewater sewer via the building drains or other sources. The treatment system consists of a flow equalization tank and filters followed by two parallel treatment trains (one is redundant to assure high reliability and/or recycle), each designed for a flow of 30 gallons per minute (gpm), plus on-line sampling and monitoring systems.

The technologies to be used in the PFP LLWTF include the following:

pH adjustment

Suspended solids removal (e.g., filtration)

Organic removal (e.g., granular activated carbon)

Radionuclide removal (e.g., Bone Char)

Inorganic removal (e.g., ion exchange)

pH Adjustment

A pH adjustment step is required in many wastewater treatment systems. This step is usually required to change the wastewater chemistry, to enhance the removal or recovery of desired contaminants by downstream process equipment, or to adjust the wastewater pH to meet regulatory discharge limits.

Adjusting the process stream pH requires an automatic system for adding either an acidic or basic reagent in the precise amount required to change the solution pH so the pH falls within the desired range. This is accomplished either in batches in large feed makeup tanks or inline using two or more relatively small tanks that are well agitated. The LLWTF shall use continuous inline mixers for adjusting the wastewater to above a pH of seven. The base to be used will be potassium hydroxide (KOH).

Suspended Solids Removal

The removal of suspended solids is essential for the protection of the downstream treatment system components and for the removal of other contaminants (e.g., organic and inorganic materials). The LLWTF will use cartridge type filters rated at ten microns. Filter loading will be monitored by differential pressure. When there is an indication of high differential pressure, the filters will be switched to the alternate stand-by filters and replaced.

Organic Removal, Radionuclide Removal, Inorganic Removal

Ion exchange, granular activated carbon (GAC), and bone char treatment technologies will be described together because the equipment used is similar. The three unit processes act to concentrate contaminants on the treatment media.

The GAC will be used to remove organic contaminants from the wastewater. Organic contaminants are adsorbed physically and retained on granular carbon particles. There will be two parallel sets of contactors per treatment train (three contactors per set) operating in series. A flow distribution system within each contactor will produce uniform wastewater flow through the GAC adsorption media. Uniform flow is necessary to provide efficient use of the activated carbon capacity. The activated carbon will not be regenerated. Disposal contactors (55 gallon drums) will be used for GAC disposal. Air will be blown through the drums and exhausted through the drain and back to the sump. The drums

will then be turned and drained of any excess liquid. They will then be packaged and shipped for disposal.

The operation of the bone char and ion exchange will be similar to that of the GAC contactors. The bone char will be used to remove transuranic radionuclides (specifically plutonium and americium) by means of adsorption onto the bone char particulate. There will be three parallel sets of bone char contactors per treatment train. Each set will consist of two contactors. The ion exchange resin will be in the form of small beads and will be used to remove inorganic contaminants by binding the ions to the ion exchange media. There will be three ion exchange contactors in series per treatment train. The contactors containing the bone char and ion exchange media will be disposed of in 55 gallon drums in the same manner as the GAC contactors

- 4) This NOC does not have "Annual Possession Quantity" limits.
- 5) **This condition was obsoleted on 11/6/2002.** Abated dose to the MEI is not expected to exceed $9.7\text{E-}05$ mrem/year.
Obsoleted by standard condition September 6, 2002.
- 6) **This condition was obsoleted on 11/6/2002.** Monitoring: shall use record sampler. The sampler probe and system design is to be consistent with ANSI N13.1 guidance for sampling particulate matter.
Obsoleted by standard condition September 6, 2002.
- 7) **This condition was obsoleted on 9/6/2002.** Process description: PFP Liquid Low Level Waste Treatment Facility prior to discharge to crib 216-Z-20 Crib.
Obsoleted by standard condition September 6, 2002.
- 8) The ventilation system shall consist HEPA filters to control particulate radionuclides, which shall remove at least 99.95 percent.
- 9) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 10) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 11) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 12) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 13) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 14) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 15) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test

results from this emission unit (WAC 246-247-075(13)).

- 16) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 17) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 18) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 19) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 20) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 21) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

- 22) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 23) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 24) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the

appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

**DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR**

**PROJECT TITLE: CONSTRUCTION AND OPERATION OF THE WASTE RECEIVING AND
PROCESSING (WRAP) FACILITY**

Date Approved: 22-Jul-02

Emission Unit Name: 296-W-4

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
	HEPA	2	Redundant systems in parallel consisting of two banks each
	HEPA	2	Redundant systems in parallel consisting of two banks each
	Prefilter	1	Prefilter for each HEPA housing
	Fan	4	

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Federal and State Regulatory</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Method 2 appendix A Method 114 appendix B 61.93(b)(2)(ii) ANSI N13.1	All radionuclides which could contribute 10% of the potential EDE.	Continuous, Collect samples biweekly at a minimum

Sampling Requirements: Continuous

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

09/07/1993 Original NOC (DOE/RL-93-15, Rev 0) approved September 7, 1993 via AIR 93-907.

07/09/1996 Revised by RTAM on July 9, 1996 approval to change monitoring technology.

01/20/1999 Revision form submitted and approved January 20, 1999 to more accurately reflect actual operations.

05/04/1999 Revision form submitted and approved May 4, 1999 to more accurately reflect actual operations.

04/26/2001 NOC revised (DOE/RL-2000-34, Rev. 0) February 6, 2001 and approved via AIR 01-405. This revision includes the recalculation of the MEI and the inclusion of diffuse/fugitive emissions.

09/11/2001 NOC Revision (DOE/RL-2000-34, revision 1) received September 11, 2001 and approved via AIR 01-1001 on October 1, 2001. Incorporated comments resolved during review of DOE/RL-2000-34, revision 0.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $5.63\text{E-}02$ mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to $1.13\text{E+}02$ mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

3) **This process is limited to:**

At the WRAP FACILITY--

Examining, assaying, characterizing, treating, verifying, and repackaging solid radioactive material and mixed waste to enable treatment, storage, or disposal of low-level waste (LLW), transuranic (TRU) waste, TRU mixed waste, and low-level mixed waste (LLMW) in contact handled (CH) containers where the external surface dose rate does not exceed 200 millirem per hour.

At SHIPPING AND RECEIVING (200 Area Diffuse/Fugitive Emissions)--

Containers delivered to and transferred/shipped from the shipping and receiving shall be unloaded, visually inspected, bar code labeled, and radiologically surveyed with information pertaining to each container entered into the data management system.

Following visual inspection, transfer incoming drums to the NDE/NDA area for further characterization using the process described for the NDE/NDA below.

Once characterized, verified, and/or certified, the certified TRU waste must be loaded into a transuranic package transporter (TRUPACT-2) shipping cask for shipment to the Waste Isolation Pilot Plant (WIPP) in New Mexico. Verified LLW shall be transferred for disposal onsite. Mixed waste must be moved to an offsite treatment or permitted storage facility, or to an onsite treatment, disposal, and/or storage unit. Radioactive material that fails verification shall be returned to the generator, processed to correct the problem, or sent to another facility for further reprocessing.

**During NONDESTRUCTIVE EXAMINATION/NONDESTRUCTIVE ASSAY SYSTEMS
(200 Area Diffuse/Fugitive Emissions)--**

The NDE/NDA shall used to examine and to certify LLW, LLMW, TRU, and TRU mixed waste container contents without opening the containers.

In the PROCESS AREA (296-W-4 Emission Unit)--

The process area consists of four glovebox lines: a TRU waste process glovebox, a TRU waste restricted waste management (RWM) glovebox, a LLW process glovebox (with supercompaction capability that also can be used for TRU waste processing), and a LLW RWM glovebox. The following is allowed in the process gloveboxes: drums opened, contents sorted and sampled, if necessary, noncompliant items removed and transferred to the RWM gloveboxes, and remaining compliant waste

repackaged into new drums.

Incoming drums generally shall be opened in gloveboxes. However, loosening of a lid or replace a damaged lid outside of a glovebox is allowed.

In the TRANSURANIC WASTE PROCESS LINE--

The TRU waste process glovebox line consists of stainless steel modular gloveboxes bolted together in a linear configuration. Windows shall be gasketed and bolted to the glovebox wall, and gloveports shall be fitted to the glovebox wall and windows to accept push-through type gloves. Glovebox ventilation shall be the once-through type. Air shall be drawn from the process room, through a nontestable high-efficiency process filter, and into the glovebox. The air shall be exhausted from the glovebox through another nontestable high-efficiency process filter to the combined glovebox exhaust system.

Process operations shall be performed inside of the gloveboxes by using the gloves and/or remote controlled manipulators. Drums shall be loaded into the glovebox through airlock and sealed-type entry systems.

In the TRANSURANIC WASTE RESTRICTED WASTE MANAGEMENT LINE--

The TRU waste RWM glovebox line consists of stainless steel. Window, gloveport, ventilation, and manipulator features shall comply to those described for the TRU waste process line glovebox. Glovebox ventilation shall be the once-through type. Air shall be drawn from the process room, through a nontestable high-efficiency process filter, and into the glovebox. The air shall be exhausted from the glovebox through another nontestable high-efficiency process filter to the combined glovebox exhaust system.

The treatment and repackaging operations that occur in the TRU waste RWM glovebox is limited to the following.

Aerosol cans are depressurized and drained. The drained liquids are treated within the gloveboxes or retained in containers, which are sent to storage outside of the WRAP Facility. Vapors from the aerosol cans shall pass through a series of demisters for removal of entrained liquids, and shall be vented to the glovebox exhaust.

Miscellaneous inorganic liquids shall be sampled for characterization, neutralized if required, and solidified using stabilizing additives.

Miscellaneous organic liquids shall be sampled for characterization, treated within the gloveboxes or repackaged for transfer to storage facilities pending future treatment.

Corrosive materials shall be neutralized. After neutralization, the materials shall be solidified or loaded out for storage or treatment outside the WRAP Facility.

Other treatment such as mercury amalgamation, stabilization of heavy metals, and macroencapsulation are allowed to be performed.

Radioactive material shall be repackaged to meet acceptance criteria of the receiving facility.

Radioactive material is sampled.

The empty aerosol cans and other treated LLW packages will be loaded into new drums and routed to the LLW process glovebox for compaction or loaded out of the RWM glovebox for storage, disposal, or additional treatment.

In the LOW-LEVEL WASTE PROCESS LINE--

The LLW process glovebox line consists of stainless steel modular gloveboxes bolted together in a linear configuration. Glovebox ventilation shall be of the once-through type. Air shall be drawn from the process room, through a nontestable high-efficiency process filter, and into the glovebox. The air shall be exhausted from the glovebox through another nontestable high-efficiency process filter to the combined glovebox exhaust system.

Drums shall enter the glovebox through an airlock entry system. Noncompliant items shall be bar code labeled and transferred to the LLW RWM glovebox using a reusable transfer system. Compliant waste shall be compacted and repackaged into new drums.

The LLW process glovebox will be modified to support CH-TRU processing, and include the capability for supercompaction. A one-trip drum exit port will be installed on the LLW glovebox. An improved drum tipper will be used to enable sorting capability, and a commercial non-destructive assay system for glovebox material balance control will be installed.

In the LOW-LEVEL WASTE RESTRICTED WASTE MANAGEMENT PROCESS LINE--

The operations in the LLW RWM process line is limited those as described for the operations in the TRU waste RWM line.

4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Alpha 0	1.00E+04	Beta 0	1.50E+05
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- 5) These conditions and limitations must be proceduralized prior to starting the activities described in the Notice of Construction.
- 6) This approval, with its Conditions and Limitations, constitutes an amendment to the Department's Radioactive Air Emission License, and must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(c) and (2)).
- 7) If this emission unit is not in compliance with the standards in WAC 245-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 8) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 9) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(10) and (11)).
- 10) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 11) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)) and (WAC 246-247-075(6)).
- 12) The department reserves the right to inspect and audit this emission unit during construction and

operation-- including all activities, equipment, operations, documents, data, and other records related to compliance with (WAC 246-247-080(1)).

- 13) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards such as ANSI/ASME NQA-1-1988, ANSI/ASME NQA-2-1986, QAMS-004 and QAMS-005. (WAC 246-247-075(6)).
- 14) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 15) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 16) All measured or calculated emissions must be reported annually (WAC 246-247-080(3)).
- 17) Report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist (or lasts more than four hours), would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 18) When this project is complete, or operations cease, the facility must notify the department via a report of closure, including whether or not any potential for airborne releases occurred (WAC 246-247-080(5)).
- 19) The facility shall make requested documents available in a timely manner for review (WAC 246-247-080(10)).
- 20) The owner/operator must inform the Department of Health whenever the activity associated with this NOC or any of the conditions or limits contained in this approval are completed, abandoned, or otherwise made obsolete.
- 21) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: CONSTRUCTION AND OPERATION OF THE WASTE RECEIVING AND
PROCESSING (WRAP) FACILITY**

Date Approved: 22-Jul-02

Emission Unit Name: 200 AREA DIFFUSE/FUGITIVE

This is a MAJOR, FUGITIVE, non-point source emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4)]

BARCT [WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
			Abatement controls as required in the following Conditions and Limitations.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Federal and State Regulatory</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
WAC 246-247-075[3]	Appendix B, Method 114	All radionuclides which could contribute 10% of the potential EDE.	As listed in the following Conditions and Limitations.

Sampling Requirements: Existing near-facility monitoring stations.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 09/07/1993 Original NOC (DOE/RL-93-15, Rev 0) approved September 7, 1993 via AIR 93-907.
- 07/09/1996 Revised by RTAM on July 9, 1996 approval to change monitoring technology.
- 01/20/1999 Revision form submitted and approved January 20, 1999 to more accurately reflect actual operations.
- 05/04/1999 Revision form submitted and approved May 4, 1999 to more accurately reflect actual operations.
- 04/26/2001 NOC revised (DOE/RL-2000-34, Rev. 0) February 6, 2001 and approved via AIR 01-405. This revision includes the recalculation of the MEI and the inclusion of diffuse/fugitive emissions.
- 09/11/2001 NOC Revision (DOE/RL-2000-34, revision 1) received September 11, 2001 and approved via AIR 01-1001 on October 1, 2001. Incorporated comments resolved during review of DOE/RL-2000-34, revision 0.
- 06/11/2002 NOC Revision (DOE/RL-2000-34, Rev. 1A) approved June 4, 2002 to provide a process description change. Conditions and Limitations, AIR 02-703, mailed on July 22, 2002.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $5.63\text{E-}02$ mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to $1.13\text{E+}02$ mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

3) **This process is limited to:**

At the WRAP FACILITY--

Examining, assaying, characterizing, treating, verifying, and repackaging solid radioactive material and mixed waste to enable treatment, storage, or disposal of low-level waste (LLW), transuranic (TRU) waste, TRU mixed waste, and low-level mixed waste (LLMW) in contact handled (CH) containers where the external surface dose rate does not exceed 200 millirem per hour.

At SHIPPING AND RECEIVING (200 Area Diffuse/Fugitive Emissions)--

Containers delivered to and transferred/shipped from the shipping and receiving shall be unloaded, visually inspected, bar code labeled, and radiologically surveyed with information pertaining to each container entered into the data management system.

Following visual inspection, transfer incoming drums to the NDE/NDA area for further characterization using the process described for the NDE/NDA below.

Once characterized, verified, and/or certified, the certified TRU waste must be loaded into a transuranic package transporter (TRUPACT-2) shipping cask for shipment to the Waste Isolation Pilot Plant (WIPP) in New Mexico. Verified LLW shall be transferred for disposal onsite. Mixed waste must be moved to an offsite treatment or permitted storage facility, or to an onsite treatment, disposal, and/or storage unit. Radioactive material that fails verification shall be returned to the generator, processed to correct the problem, or sent to another facility for further reprocessing.

**During NONDESTRUCTIVE EXAMINATION/NONDESTRUCTIVE ASSAY SYSTEMS
(200 Area Diffuse/Fugitive Emissions)--**

The NDE/NDA shall used to examine and to certify LLW, LLMW, TRU, and TRU mixed waste container contents without opening the containers.

In the PROCESS AREA (296-W-4 Emission Unit)--

The process area consists of four glovebox lines: a TRU waste process glovebox, a TRU waste restricted waste management (RWM) glovebox, a LLW process glovebox (with supercompaction capability that also can be used for TRU waste processing), and a LLW RWM glovebox. The following is allowed in the process gloveboxes: drums opened, contents sorted and sampled, if necessary, noncompliant items removed and transferred to the RWM gloveboxes, and remaining compliant waste repackaged into new drums.

Incoming drums generally shall be opened in gloveboxes. However, loosening of a lid or replace a

damaged lid outside of a glovebox is allowed.

In the TRANSURANIC WASTE PROCESS LINE--

The TRU waste process glovebox line consists of stainless steel modular gloveboxes bolted together in a linear configuration. Windows shall be gasketed and bolted to the glovebox wall, and gloveports shall be fitted to the glovebox wall and windows to accept push-through type gloves. Glovebox ventilation shall be the once-through type. Air shall be drawn from the process room, through a nontestable high-efficiency process filter, and into the glovebox. The air shall be exhausted from the glovebox through another nontestable high-efficiency process filter to the combined glovebox exhaust system.

Process operations shall be performed inside of the gloveboxes by using the gloves and/or remote controlled manipulators. Drums shall be loaded into the glovebox through airlock and sealed-type entry systems.

In the TRANSURANIC WASTE RESTRICTED WASTE MANAGEMENT LINE--

The TRU waste RWM glovebox line consists of stainless steel. Window, gloveport, ventilation, and manipulator features shall comply to those described for the TRU waste process line glovebox. Glovebox ventilation shall be the once-through type. Air shall be drawn from the process room, through a nontestable high-efficiency process filter, and into the glovebox. The air shall be exhausted from the glovebox through another nontestable high-efficiency process filter to the combined glovebox exhaust system.

The treatment and repackaging operations that occur in the TRU waste RWM glovebox is limited to the following.

Aerosol cans are depressurized and drained. The drained liquids are treated within the gloveboxes or retained in containers, which are sent to storage outside of the WRAP Facility. Vapors from the aerosol cans shall pass through a series of demisters for removal of entrained liquids, and shall be vented to the glovebox exhaust.

Miscellaneous inorganic liquids shall be sampled for characterization, neutralized if required, and solidified using stabilizing additives.

Miscellaneous organic liquids shall be sampled for characterization, treated within the gloveboxes or repackaged for transfer to storage facilities pending future treatment.

Corrosive materials shall be neutralized. After neutralization, the materials shall be solidified or loaded out for storage or treatment outside the WRAP Facility.

Other treatment such as mercury amalgamation, stabilization of heavy metals, and macroencapsulation are allowed to be performed.

Radioactive material shall be repackaged to meet acceptance criteria of the receiving facility.

Radioactive material is sampled.

The empty aerosol cans and other treated LLW packages will be loaded into new drums and routed to the LLW process glovebox for compaction or loaded out of the RWM glovebox for storage, disposal, or additional treatment.

In the LOW-LEVEL WASTE PROCESS LINE--

The LLW process glovebox line consists of stainless steel modular gloveboxes bolted together in a linear configuration. Glovebox ventilation shall be of the once-through type. Air shall be drawn from the process room, through a nontestable high-efficiency process filter, and into the glovebox. The air shall be exhausted from the glovebox through another nontestable high-efficiency process filter to the combined glovebox exhaust system.

Drums shall enter the glovebox through an airlock entry system. Noncompliant items shall be bar code labeled and transferred to the LLW RWM glovebox using a reusable transfer system. Compliant waste shall be compacted and repackaged into new drums.

The LLW process glovebox will be modified to support CH-TRU processing, and include the capability for supercompaction. A one-trip drum exit port will be installed on the LLW glovebox. An improved drum tipper will be used to enable sorting capability, and a commercial non-destructive assay system for glovebox material balance control will be installed.

In the LOW-LEVEL WASTE RESTRICTED WASTE MANAGEMENT PROCESS LINE--

The operations in the LLW RWM process line is limited those as described for the operations in the TRU waste RWM line.

- 4) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**
- | | | | |
|---------|----------|--------|----------|
| Alpha 0 | 1.71E+04 | Beta 0 | 2.56E+05 |
|---------|----------|--------|----------|
- 5) Diffuse/Fugitive emissions associated with drum storage shall be monitored using the 200 Area near-field ambient air monitors. Any change to this near-field ambient monitoring program must be approved by the department.
- 6) The sampling frequency shall follow that of the ambient near-field program.
- 7) Single station composites of ambient near-field air samples shall be analyzed for radionuclide expected to stored and handled at the facility.
- 8) This approval, with its Conditions and Limitations, constitutes an amendment to the Department's Radioactive Air Emission License, and must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(e) and (2)(c)).
- 9) If this emission unit is not in compliance with the standards in WAC 245-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 10) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 11) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(10) and (11)).
- 12) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 13) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test

results from this emission unit (WAC 246-247-075(13)) and (WAC 246-247-075(6)).

- 14) The department reserves the right to inspect and audit this emission unit during construction and operation-- including all activities, equipment, operations, documents, data, and other records related to compliance with (WAC 246-247-080(1)).
- 15) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards such as ANSI/ASME NQA-1-1988, ANSI/ASME NQA-2-1986, QAMS-004 and QAMS-005. (WAC 246-247-075(6))
- 16) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 17) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 18) All measured or calculated emissions must be reported annually (WAC 246-247-080(3)).
- 19) Any unexpected release of radioactivity, shutdown or other condition that if allowed to persist, would result in the emission of radionuclides in excess of any standards or limitation in the license, or that lasts more than four hours, must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) including unit specific emission limits, the offsite dose standard, BARCT or ALARACT, whichever is applicable, or any limitations included in the approval.
- 20) When this project is complete, or operations cease, the facility must notify the department via a report of closure, including whether or not any potential for airborne releases occurred (WAC 246-247-080(5)).
- 21) The facility shall make requested documents available in a timely manner for review (WAC 246-247-080(10)).
- 22) The owner/operator must inform the Department of Health whenever the activity associated with this NOC or any of the conditions or limits contained in this approval are completed, abandoned, or otherwise made obsolete.
- 23) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

PROJECT TITLE: CONSTRUCTION AND OPERATION OF SODIUM STORAGE FACILITY

Date Approved: 26-Nov-02

Emission Unit Name: FFTF-402-1

Emission Unit ID 398

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: None

ALARACT [WAC 246-247-040(4)]

BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
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Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
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There are no sampling requirements.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

02/24/1995 Original NOC approved via AIR 95-204 on February 24, 1995.

10/17/2002 NOC Revision Form approved October 1, 2002 to provide an activity update and change. New Conditions/Limitations sent via AIR XXX dated XXX.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 1.60E-06 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.60E-06 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**
offloading approximately 984,100 liters of sodium from the FFTF to tank storage in the Sodium Storage Facility (SSF). Unused, carbon steel sodium tanks (three 302,800-liter tanks and one 196,800-liter tank) originally built for the Clinch River Breeder Reactor Plant shall be transported from their current

location in the 300 Area and installed adjacent to the FFTF complex. Once the storage tanks are in place, a concrete building will be constructed around and over them to provide shielding and weather protection for the tanks and associated equipment. The sodium will be stored in a solid state, under an inert nitrogen or argon gas blanket.

Sodium shall be transferred to the SSF in batches from several different sodium storage/drain vessels within the FFTF. Following the transfer, the sodium shall be allowed to solidify.

Sodium transfers shall be accomplished in the following manner:

1. The receiving tank and interconnecting piping shall be preheated to between 150°C and 200°C by electric heaters.
2. When the proper temperatures have been established, the sodium shall be transferred from the supply tank to the receiving tank by establishing a differential pressure between the supply tank and receiving tank as needed to facilitate the transfer of sodium between the tanks.

The supply tank shall be pressurized using the existing FFTF argon piping. The receiving tank in the SSF will be evacuated using a vacuum pump and a high-efficiency particulate air (HEPA) type process filter connected to the tanks at the tank vent line.

3. The gas system valves shall be operated as needed to maintain the covergas differential pressure and the sodium valves opened, allowing the sodium to flow from one tank to the other. The transfers will occur in batches, with more than one cycle needed to completely fill one SSF storage tank. The inert gas displaced from the tanks during the filling evolution shall be directed out the HEPA or HEPA type filtered exhaust paths.
4. After all the transfers for a tank are complete, the inert gas system shall be used to establish the desired cover gas pressure and the tank shall be allowed to cool to ambient temperature, allowing the sodium to solidify.

4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Cs - 137	6.10E-02	H - 3	9.60E+01	Na - 22	1.20E+02
Pu - 239	8.00E-04				

- 5) This condition was obsoleted on 10/9/1995.** Submit technology standards for design of the Sodium Storage Facility.

Presented at the August 8, 1995 RTAM with meeting minutes signed on October 9, 1995.

- 6) This condition was obsoleted on 8/22/1995.** Submit an estimated cost of construction.

Provided cost estimate in transmittal letter 95-FFTF-077 dated August 22, 1995.

- 7) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).**

- 8) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).**

- 9) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 10) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 11) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 12) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 13) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 14) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 15) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 16) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 17) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 18) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 19) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

- 20) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 21) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 22) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 23) During the storage periods when no new sources are added to the SSF, the sodium shall be in a solid form after cooling. Radiological smear surveys of the facility and the near field monitoring program samplers, operated the Pacific Northwest National Laboratory shall provide periodic confirmatory measurement. This program has four samplers located around the 400 Area. Individual analytical results from each sampler shall be reported in the Annual Air Emissions Report. Any change to this near-field ambient monitoring program must be approved by the department.
- 24) During the periods when sodium transfers are performed, the estimated emissions from the SSF shall be calculated using the following method.

Assumptions:

The equivalent of one tank volume at standard temperature and pressure is evacuated after the initial contamination-free pump down.

If the uncontaminated receiving tank is initially evacuated, it may provide a sufficient pressure drop to complete the sodium transfer with no release of contaminated gas; however, for purposes of providing a conservative estimate of potential emissions it is assumed an entire tank volume of contaminated cover gas is released to the atmosphere.

The concentration of tritium in the primary sodium, conservatively assumed to fill three of the 302,800-liter tanks, is the same as historical concentrations of tritium in the reactor cover gas in 1992 (about 5×10^{-5} uCi/ml).

The concentration of tritium in the secondary sodium (assumed to fill the 196,800 liter tank) is equal to the historical concentration of the secondary sodium cover gas in 1992 (about 4×10^{-6} uCi/ml). The remaining 52,996 liters of secondary sodium will go to a 302,800 liter tank.

The amount of tritium released during the fill of one tank with primary sodium would be:

(Volume of sodium transferred in liters) (103 ml/liter) (5×10^{-5} uCi/ml) = Amount in uCi

This shall be tracked via an approved log.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

PROJECT TITLE: DUCTWORK AND PROCESS PIPING REMEDIATION IN BUILDINGS 234-5Z & 291-Z (PFP)

Date Approved: 13-Dec-02

Emission Unit Name: 291-Z-1

Emission Unit ID 393

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT

ALARACT [WAC 246-247-040(4)]

BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
(234-5Z Operations)	HEPA	2	2 Stages for process operations
236-Z Operations)	HEPA	2	2 Stages for process operations
(242-Z Operations)	HEPA	2	2 Stages for process operations
(all operations)	Fan	4	3 standby (7 total)

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4) & WAC 246-247-75(2)	Alternative effluent flow rate not to exceed 290,000 cfm. Method 114 appendix B 61.93(b)(2)(ii) ANSI N13.1	All radionuclides which could contribute 10% of the potential EDE.	Continuous

Sampling Requirements: Continuous

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

11/07/1995 Original NOC, DOE/RL-95-97, approved via AIR 95-1102 on November 7, 1995.

07/09/1996 Modification short form submitted and approved July 9, 1996

09/06/2002 AIR 02-1213, mailed on December 13, 2002 to update Conditions and Limitations to meet Department standards. NOC ID 170 combined into NOC ID 124 to reflect single NOC approval.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 2.20E-03 mrem/year to the

Printed on 13-Dec-02

- 2) Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 4.40E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**
ductwork and process piping remediation in buildings 234-5Z and 291-Z. Additional approval given to allow an additional 35-foot segment of small diameter vacuum process piping to be remediated. The additional 35 feet of piping has a source term of about 2 kilograms of plutonium.
- 4) This NOC does not have "Annual Possession Quantity" limits.
- 5) Approved with the understanding that there shall be no changes to the existing control equipment & all remediation shall utilize a containment tent w/ HEPA filtration and/or glove bags.
- 6) WDOH approved the planned modifications of the ductwork, the additional 35 feet of removal and an additional 100 feet of removal with the stipulation that the added length would involve 2 kilograms or less of plutonium.
- 7) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 8) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 9) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 10) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 11) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 12) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 13) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)). The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 14) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 15) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).

- 16) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 17) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 18) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 19) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

- 20) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 21) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 22) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: T PLANT COMPLEX SECONDARY CONTAINMENT AND LEAK
DETECTION UPGRADES**

Date Approved: 13-Dec-02

Emission Unit Name: 296-T-7

Emission Unit ID 315

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT

ALARACT [WAC 246-247-040(4)]

BARCT [WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
	Demister	1	
	Heater	1	
	Prefilter	1	
	HEPA	1	
	Fan	1	

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Federal and State Regulatory</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
40 CFR 61.93[b][4][i] & WAC 246-247-075[3]	Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	4 week sample/ year
<u>Sampling Requirements:</u> Record Sample			

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

05/12/1995: Original NOC approved via RTAM on June 12, 1995.

09/05/2002: AIR 02-1214, mailed on December 13, 2002 to update Conditions and Limitations to meet Department standards.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 6.01E-08 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.20E-04 mrem/year to the Maximally Exposed Individual

- 3) No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:

the following activities. The 2706-T Building is 18-meters wide, 20-meters long, 7.6-meters high, constructed of prefabricated steel. The 2706-T Building shall be used to decontaminate/treat railroad equipment, buses, trucks, automobiles, road building equipment, eprocess equipment, and other types of equipment as requested. The methods used by operations personnel to decontaminate/treat these items are limited to ice blasting, abrasive blasting, steam cleaning, hand wiping and sanding, grinding and cutting. The building contains two pits over which liquid generating activities are performed. Liquid mixed waste generated by this process is collected in the Railroad Pit and currently transferred to the 221-T Tank System before transfer to Double Shelled tanks (DST) System. Sampling, treatment, verification, and repackaging waste containers and boxes also are conducted in the 2706-T Building.

The 2706-TA is a pre-fabricated steel building erected on an existing concrete pad located next to the 2706-T Building. The 2706-TA building is limited to work similar to the existing activities that are being performed within the 2706-T Building.

A new building, 2707-TB will be constructed adjacent to the existing 2706-T/TA buildings for management of radioactive and mixed decon waste. Two new stainless steel storage tanks 15,000 gal and 6,000 gal will be located within the 2706-TB containment building. Both tanks will have concrete secondary containment catch basins, sized to catch 110% of the tank volume. The tanks shall be equipped with leak detection systems, transfer piping, and basin/pit sump liners. The ancillary equipment will also have secondary containment. A waste transfer pipe from the 2706-T/TA decon facility shall be connected to the new tanks. Prior to being transferred from the Railroad Pit to these tanks, the waste shall be routed through a new filtration and liquid waste load-out system.

- 4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Am - 241	3.36E-06	Co - 57	1.74E-06	Cs 137	8.00E-06
Pu - 239	1.05E-05	Sr - 90	1.53E-03		

- 5) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 6) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 7) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 8) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 9) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 10) The facility must be able to demonstrate that workers associated with this emission unit are trained in

the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).

- 11) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 12) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 13) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 14) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 15) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 16) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 17) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

- 18) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 19) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).

- 20) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR
PROJECT TITLE: SITEWIDE VENTED CONTAINER STORAGE

Date Approved: 13-Dec-02

Emission Unit Name: VENTED CONTAINERS

Emission Unit ID 448

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: None

ALARACT [WAC 246-247-040(4)]

BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
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Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93[b][4][i] & WAC 246-247-075[3]	Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	Air - every 2 weeks continuous/deposition - annually
Sampling Requirements: Environment Sampling			

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

09/19/1996 Original NOC approved via Shortform Approval on September 19, 1996

09/09/2002 AIR 02-1215, mailed on December 13, 2002 to update Conditions and Limitations to meet Department standards.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 5.10E-09 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.50E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 3) No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:
containers are used to store mixed and/or radioactive waste generated on and off the Hanford Site.
Venting devices are installed when there is the potential for non-radioactive gases (i.e., hydrogen) to be generated as a result of radiolysis.

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- 4) This NOC does not have "Annual Possession Quantity" limits.
- 5) Containers other than drums are also approved if they meet the conditions of this NOC.
- 6) Establishes a categorical As Low As Reasonably Achievable Control Technology (ALARACT) demonstration for existing Hanford Site vented containers.
- 7) NucFil(TM) filter or an equivalent filter shall be BARCT and ALARACT. Vent clips are accepted as ALARACT for existing systems to date, however, when conditions require repackaging vent clips shall be replaced by NucFil(TM) or equivalent filters.
- 8) The vented container Latitude and Longitude coordinates (46 degrees 22' 13.8", 119 degrees 16' 12.3") refer to the location resulting in the highest impact to the MEI.
- 9) Establishes a categorical Best Available Radionuclide Control Technology (BARCT) demonstration for all future Hanford Site vented containers (i.e., up to 10,000 vented container units (UVC) based on total unabated emissions and 27,000,000 UVC based on total abated emissions offering less than 0.1mrem/year to the MEI).
- 10) These containers are used for storing mixed and or radioactive waste generated on or off Hanford Site.
- 11) WDOH accepts vent clips as ALARACT since they are no longer installed.
- 12) Pu239/240 equivalent curies (PE-Ci) represents the radionuclide of concern as discussed in the Hanford Site Solid Waste Acceptance Criteria, WHC-EP-0063, 1994, Westinghouse Hanford Company, Richland Washington.
- 13) **This condition was obsoleted on 12/9/2002.** The estimated unabated and abated TEDE to the MEI per container is 1.5 E-5 and 5.1 E-9 mrem/year, respectively.
Obsoleted by standard condition December 9, 2002.
- 14) The annual possession quantity for each vented container varies. The maximum quantity per container is based on preventing nuclear criticality, which is managed by: (i)controlling the amount of fissionable material in each container, (ii)container spacing requirements, (iii)container segregation. The annual possession quantity for this categorical approval is accepted due to the variability of waste types.
- 15) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 16) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 17) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 18) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 19) The department retains the right to conduct stack sampling, environmental monitoring or other testing

around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).

- 20) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 21) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 22) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 23) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 24) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 25) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 26) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 27) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

- 28) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 29) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or

requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).

- 30) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: DISPOSITION OF SELECT PLUTONIUM-BEARING ALLOYS AT THE
PLUTONIUM FINISHING PLANT (PFP)**

Date Approved: 10-Jan-03

Emission Unit Name: 291-Z-1

Emission Unit ID: 393

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
(234-Z Operations)	HEPA	2	2 Stages for process operations
236-Z Operations)	HEPA	2	2 Stages for process operations
(242-Z Operations)	HEPA	2	2 Stages for process operations
(all operations)	Fan	4	3 standby (7 total)

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4) & WAC 246-247-75(2)	Alternative effluent flow rate not to exceed 290,000 cfm. Method 114 appendix B 61.93(b)(2)(ii) ANSI N13.1	All radionuclides which could contribute 10% of the potential EDE.	Continuous

Sampling Requirements: Continuous

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

08/08/1995 Original activity was approved by RTAM on August 8, 1995.

12/18/1996 Original NOC was approved by AIR 96-1205, December 18, 1996.

09/01/1998 NOC Revision Form revised process descriptions, submitted by RTAM August 18, 1998, was approved September 1, 1998.

03/27/2000 NOC Revision Form revised process description, submitted by RTAM March 21, 2000, was approved March 27, 2000.

06/15/2000 NOC Revision Form revised process description, submitted by RTAM June 6, 2000, was approved June 15, 2000.

09/26/2000 NOC Revision Form revised process description approved on September 26, 2000.

03/06/2001 NOC Revision Form revised process description, submitted by RTAM March 6, 2001, was approved March 6, 2001.

07/12/2001 New Conditions/Limitations sent via AIR 01-703 approved July 12, 2001.

Printed on 10-Jan-03

- 10/25/2001. New Conditions/Limitations sent via AIR 01-1013 on October 26, 2001. NOC Revision Form, DOE/RL-96-79, Rev. 0E, revised process description to include thermogravimetric analysis, submitted and approved at October 9, 2001.
- 12/14/2001 AOP Minor Modification, 02-RCA-085, received December 14, 2001 to state that AIR 01-209 replaced all previous Conditions and Limitations. No new Conditions and Limitations issued.
- 02/13/2002 Corrected letter and Conditions/Limitations mailed on February 13, 2002 via AIR 02-203, to reflect correct revision number and approval date for NOC Revision Form (AIR 01-1013). The correct revision number is DOE/RL-96-79, Rev 0F and the NOC Revision Form approval date is September 5, 2001.
- 03/28/2002 AOP Minor Modification, 02-RCA-0236, received March 28, 2002 to state that AIR 02-203 replaced all previous conditions. No new Conditions and Limitations mailed.
- 09/11/2002 NOC Revision Form approved September 3, 2002 to provide word changes for process description (DOE/RL-96-79, Rev 0G). Conditions and Limitations, AIR 03-104 mailed on January 10, 2003.
- 12/18/2002 NOC Revision Form approved December 18, 2002 to provide word changes for process description (DOE/RL-96-79, Rev 0H). Conditions and Limitations, AIR 03-104 mailed on January 10, 2003.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 2.40E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 4.80E+02 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**
the use of muffle furnaces to thermally stabilize plutonium residues. Several categories of plutonium-bearing materials allowed to be thermally stabilized via muffle furnace operations are limited to: plutonium-bearing solutions; oxides (including MOX), fluorides, process residues, metals and alloys; and polycubes and combustibles. The thermal stabilization process involves placing the material for into one of the muffle furnaces and ramping the temperature to up to a final temperature of approximately 1,000 C. The furnace is held at this temperature for a period of time and then ramped down.

Plutonium metal or alloys not requiring thermal stabilization are approved to be transferred to existing glovebox(es) and repackaged for long term storage. Retrieval and removal methods of hold-up shall employ both direct-contact and remote technologies. The removal methods include chemical and mechanical processes and disassembly. These technologies also incorporate the laboratory analyses of nondestructive assay (NDA); use of nibblers, shears, mechanical and circular saws; brushing, washing, scrubbing, vacuum cleaning and abrasive jetting surfaces; chemical removal techniques; and robotically operated laser, mechanical, and vacuum tools.

Removed hold-up material shall be thermally stabilized in muffle furnaces for long term storage; or packaged in pipe overpack containers for disposition to CWC/WIPP. Solutions generated from hold-up retrieval shall be processed through oxalate precipitation equipment and muffle furnaces for long term storage; or liquids/washes generated from hold-up retrieval may be directly discarded for disposition to CWC/WIPP.

Select plutonium-bearing alloys, hold-up material, or MOX suitable for discard are allowed to be transferred directly to a pipe overpack container (POC). The POC is allowed to be transferred from locations (e.g., vault storage, ductwork, PRF Canyon) to existing glovebox HC-46F, in Room 170. The alloys shall be removed manually from current containers and subjected to preliminary non-destructive assay (NDA; e.g., weighing). Similarly, MOX, or retrieved hold-up material shall also be removed manually from containers for NDA. Final NDA requirements for the discard alloys, MOX, or hold-up material, include specific measurement (e.g., segmented gamma scan, calorimetry). Until validated procedures/equipment for final NDA are in place, remaining alloys, MOX, or holdup material shall be stored appropriately pending final disposition.

When validated NDA procedures/equipment are available, hold-up material shall be retrieved, repackaged, and subjected to appropriate final NDA measurement. The assayed hold-up material shall be inserted into POCs and then be stored at PFP or the Central Waste Complex pending transport to the Waste Isolation Pilot Plant. Assayed alloys and MOX are allowed to be dispositioned in a similar fashion.

The muffle furnace offgas stream is allowed to consist of a mixture of air and water (from natural humidity) and a small amount of entrained plutonium oxide. Particulates greater than 0.2 micron shall be removed by ceramic filters. Residual contamination removed from the offgas stream shall be filtered by either a high-efficiency particulate air (HEPA) process filter or the furnace offgas filter prior to the ductwork. The offgas discharges through two existing stages of HEPA filtration before being released out the 291-Z-1 main stack.

The stabilization activities will result in plutonium-bearing materials suitable for long-term storage (e.g., via retrieval and/or stabilization in muffle furnaces) or suitable for discard. Discard could be conducted through the following approved licenses: cementation ALARACT, pipe overpack container, and/or direct discard via the Magnesium Hydroxide Precipitation Process.

The supercritical fluid extraction (SFE) equipment located in a 234-5Z glovebox, will be disassembled, packaged, and removed. An existing can cutter is allowed to be installed in the glovebox. Use the can cutter to open BTC's in the event of poor welding and/or not passing the leak test is allowed.

4) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am - 241	7.41E+01	Pu - 238	2.32E+01	Pu - 239	9.07E+01
Pu - 240	4.20E+01	Pu - 241	2.43E+03	U - 234	6.77E-02
U - 235	5.19E-04	U - 236	1.90E-03	U - 238	2.75E-04

- 5) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 6) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 7) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 8) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).

- 9) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 10) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 11) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 12) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 13) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 14) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 15) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 16) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 17) **This condition was obsoleted on 10/3/2001.** When this project is complete, or operations cease, the facility must notify the department via a report of closure, including whether or not any potential for airborne releases occurred (WAC 246-247-080(6)).
Conditions and Limitations added by AIR 01-703 on July 12, 2001. Condition replaced by new Sunset Condition.
Replaced by condition added by AIR 01-1013, October 25, 2001.
- 18) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 19) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 20) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the

appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

- 2i) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6)).

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

PROJECT TITLE: 340-A BUILDING TANK SLUDGE CLEANOUT

Emission Unit Name: 340-NT-EX

Emission Unit ID 423

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
		1	3 parallel flow paths, (Minimum of 2 active flow paths providing 1 stage prefiltration and 2 stages HEPA filtration)
	HEPA	2	In series. 3 parallel flow paths, (Minimum of 2 active flow paths providing 1 stage prefiltration and 2 stages HEPA filtration)
	Fan	2	In parallel, (only one fan operates at a time, one is a backup)
	Moisture separator	1	Serves the vessel off-gas portion of the treatment system

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Federal and State Regulatory</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
40 CFR 61.93(b)(4) & WAC 246-247-75(2)	Method 2 appendix A Method 114 appendix B 61.93(b)(2)(ii) ANSI N13.1	All radionuclides which could contribute 10% of the potential EDE.	Continuous
<u>Sampling Requirements:</u> Continuous			

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

05/15/1997 NOC, DOE/RL-97-06, received May 15, 1997 and approved via AIR 97-604.

02/17/1999 NOC Revision Form presented in RTAM dated February 17, 1999 revised AIR 97-604.

12/09/2002 NOC Revision Form received December 4, 2002 and approved via AIR 03-103 dated January 9, 2003. This will be included as a minor modification to the AOP.

09/12/2003 Conditions and Limitations, AIR 03-1203, mailed on December 8, 2003 to reflect current appeal language agreed upon on September 12, 2003.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 3.05E-07 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).
- 3) **This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.**

The removal of 340A Building tank solids. Solids removal campaigns will be performed on an as-needed basis to support as low as reasonably achievable (ALARA) practices and/or principles. No more than one tank solids removal campaign will be performed during any given annual period.

Sludge shall be suspended using air sparging, water slucing, and/or a circulation pump while simultaneously draining the tanks to the underground vault tanks located within the 340 complex.

Inserting of agitation devices (e.g., air sparging, water slucing, and/or a circulation pump) into the tanks shall be accomplished through an opening on the top of each tank. To reduce the potential for airborne contamination, the tanks shall be maintained at a negative pressure differential with respect to atmospheric pressure.

- 4) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 1.22E+00 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am	- 241	2.75E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu	- 238	1.17E-03	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu	- 239	5.59E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu	- 240	5.24E-04	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu	- 241	3.20E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu	- 242		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE, and represents less than 25% of the abated dose.				
Sr	- 90	4.23E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
U	- 234		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE, and represents less than 25% of the abated dose.				
U	- 235		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE, and represents less than 25% of the abated dose.				
U	- 236		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE, and represents less than 25% of the abated dose.				

Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE, and represents less than 25% of the abated dose.

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	Pu -238	Pu -239
Pu -240	Pu -241	Pu -242
Sr -90	U -234	U -235
U -236	U -238	

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. WAC 246-247-110(9). DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

- 5) Only one tank solids removal campaign shall be performed during any annual period which consists of the removal of all sludge in the subject tanks.

- 6) **This condition was obsoleted on 12/10/2002.** A clarification was made to Section 13, "Technology Standards" regarding the Retention Process Sewer (RPS). This clarification notes that the RPS can not send any waste to the 340 vault tanks because the RPS has been physically isolated from the 340 vault tanks

Added by RTAM 2-17-1999 NOC Revision Form. December 12, 2002 obsoleted by standard conditions.

- 7) **This condition was obsoleted on 9/12/2003.** These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

Standard condition added by AIR 03-103. Obsoleted by appeal language agreed upon on September 12, 2003.

- 8) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-040(5) and WAC 246-247-060(5)).

- 9) The facility shall notify the department at least seven calendar days prior to any planned preoperational tests of new or modified emission units that involve emissions control, monitoring, or containment systems of the emission unit(s). The department reserves the right to witness or require preoperational tests involving the emissions control, monitoring, or containment systems of the emissions unit(s) (WAC 246-247-060(4)).

- 10) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).

- 11) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 12) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 13) All facilities must be able to demonstrate the reliability and accuracy of the radioactive air emissions monitoring data (WAC 246-247-075(13)).
- 14) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 15) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 16) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 17) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 18) The facility shall notify the department within twenty-four hours of any shutdown, or of any transient abnormal condition lasting more than four hours or other change in facility operations which, if allowed to persist, would result in emissions of radioactive material in excess of applicable standards or license requirements (WAC 246-247-080(5)).
- 19) The licensee is not required to conduct the monitoring and associated recordkeeping for any emission unit if the emission unit did not operate at any time between required monitoring events (e.g., if the monitoring requires continuous sampling, such readings would not be required on any full day in which the emission unit did not operate), provided the following conditions are met: In the case of permanent shutdown of the emission unit: (i) the licensee completes the monitoring and associated recordkeeping for that period prior to the shutdown. (ii) the licensee files a report of closure with the Department of Health in accordance with WAC 246-247-080(6). An emission unit will not be considered to be permanently shut down or completed until a report of closure is received by the Department of Health (WAC 246-247-080(6)).
- 20) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 21) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for

entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).

- 22) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

**DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR**

**PROJECT TITLE: CONSTRUCTION AND OPERATION OF THE COLD VACUUM DRYING
FACILITY (CVDF)**

Date Approved: 20-Dec-01

Emission Unit Name: COLD VACUUM DRYING

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
Process Bay Local Exhaust	Isolation Damper	2	
Process Bay Local Exhaust	Backdraft Damper	2	
Process Bay Recirculation	HEPA	4	
Process Bay Recirculation	Fan	4	
Process Bay General Exhaust	HEPA	1	Two Stage HEPA.
Process Bay General Exhaust	Prefilter	1	
Process Bay General Exhaust	Backdraft Damper	2	
Process Bay General Exhaust	Isolation Damper	2	
Process Bay General Exhaust	Fan	2	
Process Bay Local Exhaust	HEPA	1	Two stage HEPA.
Process Bay Local Exhaust	Fan	2	

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Regulatory Requirements</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Appendix B, Method 114	All radionuclides which could contribute 10% of the potential EDE.	Monthly Sample

Sampling Requirements: NESHAP Compliant, Meeting ANSI N13.1, 1999.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 11/20/01 NOC Revision Form approved at the November 20, 2001 RTAM. New Condition/Limitation added to allow delay in leak testing of stack emissions sample line from December 2001 to January 2002. Approval letter AIR 01-1206 mailed on December 20, 2001.
- 07/27/01 NOC Revision Form approved at the July 24, 2001 RTAM. Activity added to process description. Approval letter AIR 01-907 mailed on September 13, 2001.
- 03/06/01 NOC Application/Permit Revision form approved March 6, 2001 during RTAM to change/clarify conditions. Approval letter, AIR 01-605 mailed June 19, 2001.
- 01/23/01 NOC Revision approved January 23, 2001, revised Section 6.4.1.
- 08/22/00 NOC Revision Form submitted on August 8, 2000 during RTAM and approved on August 22, 2000. This NOC Revision provided page changes to the NOC to reflect "as-built" conditions.
- 03/21/00 Revision approved on March 21, 2000, modified Section 12.0, Technology Standards.
- 08/05/99 Revision 1 approved on August 5, 1999 via AIR 99-804 changed the total offsite abated dose to the MEL.
- 06/19/97 The original NOC, Cold Vacuum Drying Facility Phase II (DOE/RL-96-110) was approved via corrected approval letter AIR 97-605 on June 19, 1997.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 4.95E-03 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 1.27E+01 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
the CVDF located to the west of the K Basins in the 100 K Area of the Hanford Site. The CVDF is limited to the following three adjoining radiological areas: the process bay area, the process support area, and the process water tank room. The process bay area shall contain four process bays and one bay used to off load water. Immediately adjacent and contiguous to the process bay area is the process support area, a steel-framed, two-story metal building that encloses the traffic corridor, process bay support rooms, and the second floor mechanical equipment room. Immediately adjacent to the process bay area on the north side is a single-story concrete and structural steel building that encloses the process water tank room.

Each operational process bay shall contain a process equipment skid, a safety-class helium system, a process hood, and a process bay recirculation heating, ventilation, and air conditioning (HVAC) system. Each process equipment skid shall contain a vacuum and purge system and a tempered water (annulus) system.

The CVDF interfaces with the 100 K Area, Hanford Site infrastructure services, and the Canister Storage Basin (CSB). The CVDF operation interfaces with K Basins operations by receiving cask-MCO packages for processing. Water removed from the MCO and water used for system flushes shall be cleaned and transported by tanker truck for appropriate dispositioning. The CVDF also interfaces with the CSB operation when the cask-MCO packages are shipped to the CSB after the cold vacuum drying process has been completed.

The stack sample line shall be reconfigured in a manner to facilitate inspections and testing as required by ANSI N13.1-1999 (i.e. removable spool piece(s) and tees for installation of pressure gauges). During reconfiguration, there will be no stack sampling and no MCO processing within the facility.

4) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ag	110	m	1.07E-02
Ag	110		1.42E-04
Am	241		1.87E+05
Am	242	m	9.79E+01
Am	242	m	9.74E+01
Am	243		6.00E+01
Ba	137	m	6.24E+06
C-	14		3.46E+02
Cd	113	m	1.77E+03
Cd	115	m	0.00E+00
Ce	141		0.00E+00
Ce	144		4.57E+02
Cm	242		8.09E+01
Cm	244		7.19E+02
Co	60		1.98E+03
Cs	134		7.94E+03
Cs	136		3.87E+01
Cs	137		6.69E+06
Eu	152		4.72E+02
Eu	154		5.35E+04
Eu	155		1.10E+04
Fe	55		9.19E+02
Gd	153		6.39E-05
H-	3		1.83E+04
I-	129		3.18E+00
In	113	m	1.07E-07
Kr	85		2.95E+05
Nb	93	m	1.23E+02
Nb	95		1.87E-12
Nb	95	m	6.24E-15
Ni	59		2.05E+01
Ni	63		2.24E+03
Np	237		2.86E+01
Pd	107		8.14E+00

Pm	147	2.31E+05
Pm	148 m	0.00E+00
Pm	148 m	0.00E+00
Pr	143	0.00E+00
Pr	144	4.51E+02
Pr	144 m	5.50E+00
Pu	238	5.55E+04
Pu	239	1.09E+05
Pu	240	5.95E+04
Pu	241	3.34E+06
Pu	242	2.74E+01
Rh	103 m	0.00E+00
Rh	106	9.09E+02
Ru	103	0.00E+00
Ru	106	9.09E+02
Sb	124	1.51E-18
Sb	125	1.67E+04
Sb	126 m	7.79E+01
Sb	126	1.09E+01
Se	79	4.31E+01
Sm	151	8.79E+04
Sn	113	1.07E-07
Sn	119 m	1.48E-01
Sn	121 m	3.98E+01
Sn	123	8.69E-06
Sn	126	7.79E+01
Sr	89	0.00E+00
Sr	90	5.05E+06
Tb	160	1.38E-15
Tc	99	1.44E+03
Te	123	1.38E-11
Te	125 m	4.09E+03
Te	127	4.74E-07
Te	127 m	4.84E-07
Te	129 m	0.00E+00
Te	129	0.00E+00
U-	234	4.37E+02
U-	235	1.68E+01
U-	236	6.34E+01
U-	238	3.48E+02
Y-	90	5.05E+06
Y-	91	1.11E-14
Zr	93	2.00E+02
Zr	95	8.44E-13

5) The CVDF shall consist of up to four process bays in which SNF transport trailers can be housed while

water is drained and vacuum/gas purge process dries SNF. It shall have a support area consisting of a control room, change rooms, and other functions.

- 6) All controls, as described in the amended NOC are required, and building HEPA filters meet ASME AC-1.
- 7) **This condition was obsoleted on 12/01/2000.** Prior to start-up of this facility (WAC 246-247-060(4)), the department shall be notified.
The department was notified prior to operation of the facility.
- 8) The slack monitoring system must be continuous and NESHAPs compliant.
- 9) This approval, with its Conditions and Limitations, constitutes an amendment to the Department's Radioactive Air Emission License. This amendment must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(e) and (2)(c)).
- 10) The facility shall notify the department at least seven days prior to any planned preoperational testing of the emission unit's emissions control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 11) Records must be readily (promptly) available for this unit. Those records must be maintained onsite, and must be retained for at least five years (WAC 246-247-080(8)).
- 12) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 13) The facility shall make requested documents available in a timely manner for review (WAC 246-247-080(10)).
- 14) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with WAC 246-247-080(8)). (WAC 246-247-080(6)).

- 15) **This condition was obsoleted on 03/06/2001.** If there is an unexpected release of radioactivity or if there is a shutdown or other condition that, if it were allowed to persist, would result in emissions of radionuclides in excess of any standards or limitations in the license or that last more than four hours, it must be reported to the department within 24 hours. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in the approval (paragraph 5).

Added by Revision 1 approved on August 5, 1999 via AIR 99-804. Obsoleted on March 6, 2001 by NOC Application/Permit. Revision form, AIR 01-605.

- 16) All measured or calculated emissions must be reported annually (WAC 246-247-080(3)).

- 17) This unit must be fully accessible to Department of Health inspectors. If there are any specific training requirements or have restrictions or special requirements for entry, they must be given to the department when they are known to allow for unannounced inspections, as required by EPA (WAC 246-247-080(9)). At a minimum, for unannounced inspections, such requirements or restrictions must be told to inspectors that morning, with the opportunity for the inspectors to meet those requirements. For prior announced inspections, such notification must occur far enough in advance for the inspectors to have reasonable time to meet the requirements.
- 18) The department reserves the right to inspect and audit this unit during construction and operation, including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080(1)).
- 19) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 20) These conditions and limitations must be proceduralized prior to starting the activities described in the Notice of Construction.
- 21) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from this unit (WAC 246-247-075(13) and WAC 246-247-075(6)). The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in, or equivalent to, those listed in the above cited regulation.
- 22) If the department finds that the emission unit described in this NOC, is not in compliance with the standards in WAC 246-247-040 during construction, as described in this NOC, or during operation, it reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
- 23) The facility must be able to demonstrate that the workers associated with this emission unit are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
- 24) Equipment and procedures for continuous monitoring shall conform to ANSI N13.1 (1999). The specific design must be approved by the department prior to installation. Any deviation from ANSI N13.1 must be approved by the department prior to construction (WAC 246-247-075(2)).
- 25) The department retains the right to conduct its own stack sampling, environmental monitoring or other testing, as required around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 26) Report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in this approval (paragraph 5).

The following shut down of the CVDF emission control systems under circumstances specified are allowed and are excluded from the 24 hour reporting requirements:

- a) Shutdown of the process bay recirculation system when there is no MCO processing within that bay.
 - b) Shutdown of the process bay local exhaust system when there is no MCO processing within that bay.
 - c) Shutdown of the general exhaust system for no more than eight hours during which time there will be no MCO within the CVDF nor transfer of water from process water conditioning tank PWC-TK-4001 to a tanker truck for disposal nor opening of the process bay roll up doors.
- 27) The first annual leak testing of the stack emissions sample line is allowed to be deferred until January 2002 to allow installation of an access port in the stack. Future annual leak test shall be based on this

new test date.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: B PLANT MODIFICATION OF THE VENTILATION SYSTEM (EMISSION
POINT: 296-B-1)**

Emission Unit Name: 296-B-1

Emission Unit ID 402

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT[WAC 246-247-040(4)]
BARCT[WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	Prefilter	2	Two trains, one in each train
	HEPA	4	Two trains, 2 in each train
	Fan	2	Only one fan operates at a time.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4) & WAC 246-247-075(2)	Method 2 appendix A Method 114 appendix B 61.93(b)(2)(ii) ANSI N13.1	137Cs, 90Sr	Continuous

Sampling Requirements: Continuous

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section

Change History

08/20/1997 Original NOC approval on August 20, 1997 via AIR 97-805.

10/28/1997 Modifications to the NOC DOE/RL-97-17 approved October 28, 1997 via AIR 97-1012.

06/16/1998 NOC Revision approval via RTAM June 16, 1998.

07/21/1998 NOC Revision approval via RTAM July 21, 1998.

09/08/1999 NOC revision approved September 8, 1999.

01/04/2000 NOC Revision Form approved via RTAM January 4, 2000.

09/05/2000 NOC Revision Form approved September 5, 2000.

09/06/2002 AIR 02-1236, mailed on December 31, 2002 to update Conditions and Limitations to meet Department standards.

09/12/2003 Conditions and Limitations, AIR 03-1216, mailed on December 23, 2003 to reflect current appeal language agreed upon on September 12, 2003.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 4.52E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).
- 3) **This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.**

Installation of exhaust ductwork, installation of air clean-up train equip. and fans, installation of a new exhaust stack, isolation & ventilation of existing filter banks, isolation of existing stack & exhaust fans, and operation of the installed systems.

- 4) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 7.87E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	2.56E-01	Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Cs - 137	8.40E+02	Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Pu - 238	3.60E-02	Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Pu - 239/240	3.84E+00	Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Sb 125		Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% to the abated dose.			
Sr - 90	3.48E+01	Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Y - 90		Liquid/Particulate Solid	WAC 246-247-030(21)(b)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% to the abated dose.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am -241	Cs -137	Pu -238
Pu -239/240	Sb -125	Sr -90
Y -90		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. WAC 246-247-110(9). DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

- 5) The new 291-B Stack must comply with all applicable National Emissions Standards for Hazardous Air Pollutants (NESHAPS) requirements. All equipment in the new ventilation system must meet the specifications outlined in this approval.
- 6) **This condition was obsoleted on 12/30/2002.** The offsite abated emission must not exceed 4.52 E-02 millirem per year to the Maximally Exposed Individual.
Original NOC approval on August 20, 1997 via AIR 97-805. Replaced by standard condition via AIR 02-1236.
- 7) The new HEPA filters must be fully compatible with ANSI 509/510 standards.
- 8) **This condition was obsoleted on 7/29/1999.** The air cleanout train (ACT) must be located at the south side of B-Plant. The ACT duct must be near the number 5 stairwell at B-Plant. The new stack will be approximately west of stairwell number 7. The concrete pads for filter housing exhaust for filter housing, exhaust fans and duct supports will be placed on the south side of the 221-B Canyon Building. The concrete pads will be no more than 4.5 feet below grade.
Modifications to the NOC DOE/RL-97-17 approved October 28, 1997 via AIR 97-1012
- 9) **This condition was obsoleted on 7/29/1999.** Conditions of AIR-97-805 shall apply.
Modifications to the NOC DOE/RL-97-17 approved October 28, 1997 via AIR 97-1012
- 10) **This condition was obsoleted on 7/29/1999.** A procedure must be written to measure the activity of the soil prior to excavation. Records of the activity of the soil measured during excavation must be kept. These records must be available to DOH during inspections.
Modifications to the NOC DOE/RL-97-17 approved October 28, 1997 via AIR 97-1012
- 11) The discharge from the new stack must be fully NESHAPS compliant and continuously monitored in accordance to the requirements of 40 CFR 61.93.
- 12) **This condition was obsoleted on 7/28/1999.** The continuous air monitor (CAM) listed in Section 9.4 of DOE/RL-97-17, Revision 0 in the proposed stack can be eliminated.
Modifications to the NOC DOE/RL-97-17 approved October 28, 1997 via AIR 97-1012
- 13) In lieu of annual testing, the record HEPA filter (second filter) shall have an efficiency greater than 90% for particles with a median diameter of 0.3 micron as specified by the manufacturer and doesn't need to be tested.
- 14) **This condition was obsoleted on 2/2/1999.** Results of environmental samplers near B Plant will be trended during the shut down, and the trended results will be provided to DOH at the end of the calendar year. The system is scheduled to be restored to normal operation at the end of the calendar year.
NOC Revision Form approval via RTAM on June 16, 1998
- 15) **This condition was obsoleted on 12/9/1999.** The plant will provide DOH with one-time verification of minimal air flow at the same 4 locations following shut-down to determine whether there is any airflow out of the 221-B Canyon.
NOC Revision Form approval via RTAM on June 16, 1998
- 16) **This condition was obsoleted on 2/2/1999.** The 296-B-1 Stack powered exhaust system fans will be temporarily shut down while a test plan is prepared to support duct system repair. The test plan will establish conditions for operating the stack exhaust system during the duct system trouble-shooting and repair period. Prior to exhaust system restart, the test plan will be approved by DOH. While the stack exhaust system is shut down, the following actions will be taken:
 1. Perform swipe surveys each working day for radiological contamination at the 221-B Canyon Doors

1, 3, R1 and the railroad tunnel roll-up door. DOH will be notified if contamination is found as a result of these surveys.

2. Biweekly results from environmental samplers near B Plant (near field samplers N019, N970, N973 and N976) will be trended during the shutdown, and the trend results will be provided to DOH after the repairs have been completed and the system is up and operating.

NOC Revision Form approval via RTAM on June 16, 1998

- 17) **This condition was obsoleted on 2/2/1999.** Daily surveys for radiological contamination will be made at 221-B Canyon Doors 1, 3, R1 and the railroad tunnel roll-up door. DOH will be given a courtesy notification if any contamination is found as a result of these surveys.

NOC Revision Form approval via RTAM on June 16, 1998

- 18) **This condition was obsoleted on 12/9/1999.** The plant will perform a pre-shut-down radiological contamination survey of these four doors.

NOC Revision Form approval via RTAM on June 16, 1998

- 19) **This condition was obsoleted on 2/2/1999.** Restarting of the B Plant exhaust system is to be on or before February 15, 2000.

NOC Revision Form approval via RTAM on June 16, 1998

- 20) **This condition was obsoleted on 12/9/1999.** The plant will provide DOH with deactivation documentation showing that potential points of fugitive emissions, other than the four points listed above, were sealed.

NOC Revision Form approval via RTAM on June 16, 1998

- 21) **This condition was obsoleted on 12/9/1999.** The plant will provide DOH with drawings or other documentation that demonstrate that backdraft dampers in the Stairwell 3 door are designed to close when the ventilation is shut down.

NOC Revision Form approval via RTAM on June 16, 1998

- 22) **This condition was obsoleted on 9/12/2003.** These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

Condition added to reflect current standard condition via AIR 02-1236. Obsoleted by appeal language agreed upon on September 12, 2003.

- 23) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-040(5) and WAC 246-247-060(5)).

- 24) The facility shall notify the department at least seven calendar days prior to any planned preoperational tests of new or modified emission units that involve emissions control, monitoring, or containment systems of the emission unit(s). The department reserves the right to witness or require preoperational tests involving the emissions control, monitoring, or containment systems of the emissions unit(s) (WAC 246-247-060(4)).

- 25) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).

- 26) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).

- 27) The facility must be able to demonstrate that workers associated with this emission unit are trained in

- the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 28) All facilities must be able to demonstrate the reliability and accuracy of the radioactive air emissions monitoring data (WAC 246-247-075(13)).
- 29) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 30) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 31) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart II (WAC 246-247-080(2)).
- 32) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 33) The facility shall notify the department within twenty-four hours of any shutdown, or of any transient abnormal condition lasting more than four hours or other change in facility operations which, if allowed to persist, would result in emissions of radioactive material in excess of applicable standards or license requirements (WAC 246-247-080(5)).
- 34) The facility shall file a report of closure with the department whenever operations producing emissions of radioactive material are permanently ceased at any emission unit (except temporary emission units) regulated under this chapter. The closure report shall indicate whether, despite cessation of operations, there is still a potential for radioactive air emissions and a need for an active or passive ventilation system with emission control and/or monitoring devices. If decommissioning is planned and will constitute a modification, a NOC is required, as applicable, in accordance with WAC 246-247-060. (WAC 246-247-080(6))
- 35) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 36) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 37) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: B PLANT MODIFICATION OF THE VENTILATION SYSTEM (EMISSION
POINT: 296-B-1)**

Emission Unit Name: 296-B-2

Emission Unit ID 404

This is a MAJOR, PASSIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	1	In series(passive ventilation)

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(2)	Alternative monitoring method approved is quarterly NDA testing on the second in-line HEPA filter.	All radionuclides which could contribute 10% of the potential EDE.	quarterly

Sampling Requirements: Continuous

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section

Change History

08/20/1997 Original NOC approval on August 20, 1997 via AIR 97-805.

10/28/1997 Modifications to the NOC DOE/RL-97-17 approved October 28, 1997 via AIR 97-1012.

06/16/1998 NOC Revision approval via RTAM June 16, 1998.

07/21/1998 NOC Revision approval via RTAM July 21, 1998.

09/08/1999 NOC revision approved September 8, 1999.

01/04/2000 NOC Revision Form approved via RTAM January 4, 2000.

09/05/2000 NOC Revision Form approved September 5, 2000.

09/08/2002 AIR 02-1236, mailed on December 31, 2002 to update Conditions and Limitations to meet Department standards.

09/12/2003 Conditions and Limitations, AIR 03-1216, mailed on December 23, 2003 to reflect current appeal language agreed upon on September 12, 2003.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 4.52E-02 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).

- 3) **This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.**

Installation of exhaust ductwork, installation of air clean-up train equip. and fans, installation of a new exhaust stack, isolation & ventilation of existing filter banks, isolation of existing stack & exhaust fans, and operation of the installed systems.

- 4) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 7.87E+01 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Cs - 137	6.38E+02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Pu - 239/240		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% to the abated dose.			
Sr - 90	1.10E+02	Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Y - 90		Liquid/Particulate Solid	WAC 246-247-030(21)(a)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% to the abated dose.			

The radioactive isotopes identified for this emission unit are (no quantities specified):

Cs - 137	Pu - 239/240	Sr - 90
Y - 90		

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. WAC 246-247-110(9). DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

- 5) The new HEPA filters must be fully compatible with ANSI 509/510 standards.
- 6) The HEPA filter associated with the venting of the retired filters plus the sand filter must use the alternative method for collecting the record samples and HEPA maintenance. The alternate method requires the quarterly nondestructive analysis of the second HEPA in series. The logs of these analyses are used to track emissions. The records must be available during DOH inspections for a representative tracking period, and are otherwise subject to the 5 year readily retrievable requirement of

- 7) **This condition was obsoleted on 12/30/2002.** The offsite abated emission must not exceed 4.52 E-02 millirem per year to the Maximally Exposed Individual.
Original NOC approval on August 20, 1997 via AIR 97-805. Replaced by standard condition via AIR 02-1236.
- 8) **This condition was obsoleted on 9/12/2003.** All other conditions listed in the NOC must be used to passively ventilate the retired filters and the 291-B stack after the old system will be shut down.
Original NOC approval on August 20, 1997 via AIR 97-805. December 27, 2002, condition updated to remove section reference to NOC. AIR 02-1236. Obsoleted to reflect current appeal language agreed upon on September 12, 2003.
- 9) In lieu of annual testing, the record HEPA filter (second filter) shall have an efficiency greater than 90% for particles with a median diameter of 0.3 micron as specified by the manufacturer and doesn't need to be tested.
- 10) If a valve is found to be leaking, the Department of Health must be notified prior to replacement to determine if a notice of construction is needed for the procedure.
- 11) Change the frequency of NDA on the record filter from quarterly to annually.
- 12) Perform aerosol testing of the record filter annually.
- 13) **This condition was obsoleted on 9/12/2003.** These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
Condition added to reflect current standard condition via AIR 02-1236. Obsoleted by appeal language agreed upon on September 12, 2003.
- 14) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-040(5) and WAC 246-247-060(5)).
- 15) The facility shall notify the department at least seven calendar days prior to any planned preoperational tests of new or modified emission units that involve emissions control, monitoring, or containment systems of the emission unit(s). The department reserves the right to witness or require preoperational tests involving the emissions control, monitoring, or containment systems of the emissions unit(s) (WAC 246-247-060(4)).
- 16) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 17) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 18) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 19) All facilities must be able to demonstrate the reliability and accuracy of the radioactive air emissions monitoring data (WAC 246-247-075(13)).
- 20) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).

- 21) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 22) The facility must meet all reporting and record keeping requirements of 40 CFR 61. Subpart H (WAC 246-247-080(2)).
- 23) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 24) The facility shall notify the department within twenty-four hours of any shutdown, or of any transient abnormal condition lasting more than four hours or other change in facility operations which, if allowed to persist, would result in emissions of radioactive material in excess of applicable standards or license requirements (WAC 246-247-080(5)).
- 25) The facility shall file a report of closure with the department whenever operations producing emissions of radioactive material are permanently ceased at any emission unit (except temporary emission units) regulated under this chapter. The closure report shall indicate whether, despite cessation of operations, there is still a potential for radioactive air emissions and a need for an active or passive ventilation system with emission control and/or monitoring devices. If decommissioning is planned and will constitute a modification, a NOC is required, as applicable, in accordance with WAC 246-247-060. (WAC 246-247-080(6))
- 26) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 27) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 28) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

PROJECT TITLE: ROTARY MODE CORE SAMPLING (RMCS) SYSTEMS AT 241-SX

Date Approved: 31-Dec-02

Emission Unit Name: 296-S-15

Emission Unit ID 64

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **ALARACT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
	Prefilter	1	1 flow path
	HEPA	2	1 flow path
	Fan	1	1 flow path

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Federal and State Regulatory</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
40 CFR 61.93[b][4][i] & WAC 246-247-075[3]	Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	4 week sample/ year
Sampling Requirements: Record Sample			

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

10/20/1997 Original NOC (DOE/RL-97-70) received on October 20, 1997 and approved via AIR 97-1101 on November 13, 1997.

05/23/2002 AOP Administrative Amendment received May 23, 2002 to clarify HEPA filter testing requirements. DOH required submittal of AOP Administrative Amendment in the standard form.

05/24/2002 AOP Administrative Amendments approved on June 18, 2002 (to clarify HEPA filter testing requirements) and August 6, 2002 (to correct typographical errors). Conditions and Limitations mailed on December 31, 2002 via AIR 02-1237.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 2.00E-06 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 3.30E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

Printed on 06-Jan-03

- 3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**

performing rotary mode core sampling in the SX Tank Farm using the existing SX Tank Farm ventilation system.

The SX tank Farm contains fifteen 3,790,000-liter (1-million gallon) single-shell tanks (SST) constructed between 1953 and 1954. The first six tanks were put into operation in 1954 and the last nine in late 1955. These tanks were the first tanks designed for self-boiling waste, and received waste from the REDOX Plant. During the 1960's and 1970's, nine tanks were removed from service with the remaining tanks being removed from service by 1980. Tanks SX-101 through SX-105 are 44 to 66 percent full, containing mostly salt cake with some sludge. The SX Tank Farm exhauster operated continuously to provide ventilation and cooling for SX tanks.

Each RMCS system consists of the sample truck, an optional exhauster, an optional diesel powered electric generator, an optional in-tank video camera, a pressurized nitrogen supply, and other support equipment. RMCS system set up and sampling are controlled by operating procedures. These procedures incorporate controls to keep personnel exposure, radioactive contamination, and environmental releases as low as reasonably achievable (ALARA). Controls include activities to prevent or minimize the spread of contamination (e.g. use of ground covers), minimizing the time that risers are open, and continuous health physics technician (HPT) coverage whenever the work activities could result in higher than normal dose rates or contamination levels.

Prior to moving the RMCS truck and equipment onto a tank, a walk down is performed. The walk down identifies any physical obstructions/barriers to truck placement and verifies the riser locations. The RMCS truck and equipment are then moved to the tank farm for system set up. System set up includes installation of the riser sleeve and riser equipment. This requires that the riser flange cover be removed. Before and during flange cover removal, monitoring is conducted for toxic and flammable gasses. Following removal of the riser flange cover, the riser sleeve and riser adapter equipment are installed. This equipment seals against the riser flange, protecting the air pathway. The time between the removal of the flange cover and installation of the riser adapter equipment is kept to the minimum necessary to safely complete the task, and continuous HPT coverage is provided the entire time the riser is open. Since SX-101 through SX-105 are actively ventilated tanks, the possibility of a positive pressure difference between the tank and the atmosphere is remote.

The operation of core sampling begins by inserting a drill string, 5.7 centimeters diameter, made up of drill rod sections, into the waste. The first section to be installed is the core barrel in which the core sampler itself is seated. The rotary mode core samplers contain a one-way seal against the bottom of the core barrel. The seal is designed to allow purge gas flow into the tank and prevent back flow of tank vapors into the drill string. This protects the air pathway out of the tank. The remaining drill rod sections are screwed on to the drill string and inserted into the tank until the starting point for the first core sample segment is reached.

After the first core sample segment has been taken, additional drill string sections are added and samplers are lowered down the drill string by the core sample truck. A succession of 48.3 centimeter long, 2.8 centimeter diameter segments are taken until the core sample is complete. The preferred mode of sampling is push mode, which does not involve rotation of the drill string or significant purge gas

flow. During push mode sampling nitrogen gas is used only in amounts sufficient to maintain the hydrostatic head and prevent movement of tank waste into the core barrel. When the waste is too hard to push through, the core sample truck is placed in rotary mode to allow the bit to drill through the waste. It is while sampling in rotary mode that an exhaust system is necessary. Although the SX exhaust system operates continuously as described, an exhaust system is not required when sampling in push mode.

Whenever the drill bit is rotating, the drill string is purged with nitrogen at approximately 1 cubic meter per minute to a maximum of 2.8 cubic meters per minute. The possibility of over pressurizing the dome space, due to the nitrogen purge, is monitored. The drill system is automatically shut down if tank pressure is not negative. Each 48.3 centimeter segment requires 5 to 20 minutes of drilling. When the segment is complete, the drill string is disconnected from the core sample truck and is capped. This, in addition to the sampler seal in the core barrel, acts to protect the air pathway. The core sampler truck platform is rotated to align and connect the shielded receiving vessel ("shielded receiver") with the drill string. During the connection the air pathway is protected by closed valves on the shielded receiver and on the adapter on the end of the drill string.

When the sampler is removed from the tank, it is placed directly into the shielded receiver without disturbing the air tight seal between the shielded receiver and the drill string. The isolation valves on the shielded receiver and the drill string adapter are closed before disconnecting the shielded receiver from the drill string. The truck platform then rotates to place the shielded receiver either directly over a shipping cask, or the shielded receiver can be positioned over an x-ray machine to allow the sampler to be x-rayed. In either case, the sealed drill string remains in place at the tank riser to maintain the seal to the atmosphere. From the shielded receiver, the sampler is mechanically lowered into a transport cask and the shielded receiver has been disconnected, the cask is immediately sealed.

While the sampler is being replaced after each segment, nitrogen is injected into the drill string at approximately 0.03 cubic meter per minute. This maintains the hydrostatic head in the drill string, preventing waste from entering the drill string, and allows for pressurization and depressurization of the shielded receiver, as necessary, for sampler changeout.

Once a complete core has been obtained, the RMCS truck can be repositioned on the same riser or moved to a different riser on the same tank to obtain additional cores. When sampling is complete at one tank, the RMCS system shall be disconnected and moved to the next tank.

Potential releases resulting from RMCS activities shall be primarily in particulate form. This is a result of the rotating action of the drill bit. When the drill bit is rotating in hard, dry waste, there may be a slight increase in particulate loading in the tank vapor space. When taking a sample in push mode or when the drill bit is rotating in damp waste material, no measurable increase in the tank vapor space particulate loading is expected. Only a minimal amount of nonparticulate radionuclides will enter the vapor space from RMCS activities because a very small percentage (less than 0.1 percent) of the total tank waste is being disturbed.

4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Ac - 227	2.04E-02	Am - 241	8.44E+02	Am - 243	2.99E-02
Ba - 137 m	2.96E+06	C - 14	3.82E+02	Cd - 113 m	9.93E+02
Cm - 242	1.98E+00	Cm - 243	1.71E-01	Cm - 244	2.02E+00
Co - 58	4.22E+02	Cs - 134	2.99E+01	Cs - 137	3.13E+06

Eu - 152	6.65E+01	Eu - 154	6.92E+03	Eu - 155	3.70E+03
H - 3	2.81E+03	I - 129	5.26E+00	Nb - 93 m	1.70E+02
Ni - 59	5.40E+01	Ni - 63	5.20E+03	Np - 237	1.00E+01
Pa - 231	5.99E-02	Pu - 238	2.90E+01	Pu - 239	1.03E+03
Pu - 240	1.98E+02	Pu - 241	1.80E+03	Pu - 242	9.41E-03
Ra - 226	3.76E-03	Ra - 228	1.52E+00	Ru - 106	7.57E-02
Sb - 125	1.80E+03	Se - 79	4.66E+01	Sm - 151	1.65E+05
Sn - 126	6.52E+01	Sr - 90	3.15E+06	Tc - 99	2.73E+03
Th - 229	3.56E-02	Th - 232	1.02E-01	U - 232	7.72E+00
U - 233	2.96E+01	U - 234	1.02E+01	U - 235	4.15E-01
U - 236	3.37E-01	U - 238	1.14E+01	Y - 90	3.15E+06
Zr - 93	2.27E+02				

- 5) **This condition was obsoleted on 12/17/2002.** The process description in Section 6.0, with the equipment described, is the only activity and equipment approved. The sequence of events to protect the air pathway must be followed. No processes are approved, unless described in this section.

Obsoleted as condition now reflected in the Process Description.

- 6) Due to uncertainties in tank content and to assure that conditions are adequately monitored, the SX exhaustor must be continuously sampled whenever samples are being collected under the umbrella of the NOC in rotary mode.

- 7) **This condition was obsoleted on 12/17/2002.** The existing sampling system may be used, providing it successfully passes an inspection by the department. That inspection can be arranged as soon as the project is ready to proceed. The sampling system must be isokinetic or subsokinetic.

Obsoleted as inspection was completed October 17, 1996.

- 8) **This condition was obsoleted on 12/17/2002.** Only those activities described specifically in this NOC may be conducted. No inferences to other projects will be allowed.

Obsoleted as condition now reflected in the Process Description.

- 9) This project is only approved for the 241-SX-101 through 105 tanks, in any combination, not to exceed eight cores per year. No other tanks in the SX Tank Farm may be sampled under this NOC, since no data for those tanks is provided.

- 10) The offsite projected abated dose to the Maximally Exposed Individual was verified with CAP-88 PC, after several conversations with Hanford staff to assure us that we were using the same parameters. The CAP-88 run in the NOC was the mainframe version, using parameters that the department has not approved. The officially accepted calculation for verification is the PC version, which is the only version we have. All issues between the two versions were satisfactorily resolved for this project.

- 11) Health physics and existing near field monitoring must be routinely performed to verify that no fugitive emissions occur. The fan or fans must be operated sufficiently to ensure that tank pressure is maintained below atmospheric pressure. If negative pressure is lost in the tank being sampled in rotary mode, the drill system must be shut down.

- 12) **This condition was obsoleted on 12/17/2002.** All activities associated with this approval must be proceduralized prior to beginning the project.

Replaced with automatic condition and limitation.

- 13) Records must clearly indicate when core samples are being collected in rotary mode versus push mode.
- 14) **This condition was obsoleted on 12/17/2002.** The offsite dose limit for this project, added to current SX Tank Farm emissions, may not exceed 2.0 E-6 mrem/year to the maximally exposed individual.
Obsoleted by automatic condition number 2.
- 15) The SX tank being sampled during rotary mode core sampling must be actively ventilated at all times.
- 16) **This condition was obsoleted on 12/17/2002.** Abated emissions of each radionuclide are limited to those in Table 8. No radionuclide that is not listed in this table may be emitted in any detectable concentrations (using current laboratory detection methods).
Obsoleted by automatic condition number 4.
- 17) The HEPA filters must be successfully demonstrated to have passed an efficiency test prior to operating the RMCS in rotary mode. It must be at least 99.95% efficient using a DOP aerosol as defined in ASME N510 or approved equivalent.
- 18) During push mode sampling, periodic confirmatory sampling may be conducted; in the manner currently documented in the Air Operating Permit for 296-S-15.
- 19) The facility shall notify the department at least seven days in advance of any planned preoperational testing of the emission unit's emission control, monitoring, or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 20) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 21) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 22) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 23) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 24) The facility shall make available in a timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know. (WAC 246-247-080(10)).
- 25) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restrictions or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 26) The department retains the right to conduct its own stack sampling, environmental monitoring, or other testing, as required around this unit to assure compliance. If the department so decides, the facility

- must make provision for such testing (WAC 246-247-075(9) and (10))
- 27) The facility must be able to demonstrate that workers associated with this emission unit are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12))
 - 28) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
 - 29) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from this unit (WAC 246-247-075(13)).
 - 30) The department reserves the right to inspect and audit this unit during construction and operation, including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080(1)).
 - 31) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
 - 32) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
 - 33) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
 - 34) Prior to shutdown of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shutdown or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shutdown emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(6)). (WAC 246-147-080(6))

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: GUZZLER EXCAVATION AND BACKFILLING ACTIVITIES IN SUPPORT
OF THE 200 EAST AREA A FARM COMPLEX**

Date Approved: 31-Dec-02

Emission Unit Name: GUZZLER

Emission Unit ID 476

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
	Collection Tank and Plate Separator	1	
	Cyclone Separator	1	Baghouse with 72 bags each.
	Micro-strainer Device	1	
	HEPA	3	Three in-place tested HEPA filters in parallel.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Federal and State Regulatory</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
WAC 246-247-075(3)	Appendix D, Method H4(3)	All radionuclides which could contribute greater than 10% of the potential-to-emit TEDE to the MEL, greater than 0.1 mrem/yr potential-to-emit TEDE to the MEL, and greater than 25% of the TEDE to the MEL, after controls.	When the HEPA filters are replaced and annually screening the HEPA filtration system.

Sampling Requirements: Radiation surveys and to include but not limited to NDA testing of the HEPA filters and screening the HEPA filtration system using gamma spectroscopy.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

12/23/1997 Original NOC approved via Shortform Approval on December 23, 1997.

09/12/2002 AIR 02-1238, mailed on December 31, 2002 to update Conditions and Limitations to meet Department standards.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $5.00\text{E-}02$ mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to $5.00\text{E-}02$ mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

- 3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**
the utilization of the Guzzler for excavation of soil and gravel within the A Farm Complex. Activities shall include potholing for utility locations and general soil removal and excavation.

The soil used for backfilling activities shall be completed manually using shovels, backhoes, loaders, and packers.

- 4) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Am - 241	1.49E-03	Sr 90	2.24E-01
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- 5) HPT shall field surveys every vertical and linear foot of excavation.
- 6) Aerosol testing and NDA of Guzzler HEPA filters shall be conducted annually.
- 7) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 8) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 9) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 10) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 11) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 12) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 13) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 14) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this

chapter (WAC 246-247-080(1)).

- 15) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 16) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 17) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 18) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 19) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

- 20) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 21) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 22) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

**DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
LICENSE AMENDMENT FOR**

PROJECT TITLE: LIFE SCIENCES LABORATORY-1 (331 BUILDING)

Date Approved: 14-Feb-02

Emission Unit Name: EP-331-01-V

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
Room 302	Fan	2	in parallel (fan common to glove box and hoods)
Rooms 101-107 fume hood/chambers	HEPA	1	
Rooms 100-107 glove boxes	HEPA	2	In series
3rd floor fume hood	HEPA	1	
Inhalation suite (glove boxes & fume hoods)	HEPA	2	In series
Room 302	HEPA	1	
Third Floor Change Rm	HEPA	1	

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4) & WAC 246-247-075(2)	Appendix B, Method 114(3)	All radionuclides which could contribute 10% of the potential EDE.	Continuous

Sampling Requirements: Continuous

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

01/23/02 NOC Modification, Life Sciences Laboratory - 1 (331 Building), to update facility floor plan configurations, incorporate proposed research programs, and to incorporate new radionuclides. Received January 23, 2002. Approval letter, AIR 02-207 mailed on February 14, 2002 replaced all previous Conditions/Limitations for this NOC.

01/21/98 Original NOC, Modifications to the Life Sciences Laboratory (331 Building) 300 Area, approved on January 21, 1998 via AIR 98-108.

03/12/96 Received approval to remove a HEPA filter bank from the 331 building exhaust via RTAM.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 8.07E-02 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 7.13E+00 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
research activities conducted in the 331 Building support the Hanford environmental mission and other key DOE missions of national and international importance. Research activities are performed on both radioactive and non-radioactive samples. Laboratory processes are conducted "continuously" (i.e., year-round, during normal business hours). The following processes are allowed in the 331 Building:

Study of the health effects of chemical and radiation exposure on animals and in cells grown in culture.

Examining the uptake and transformation effects of radionuclides in soils, plants, animals and microorganisms.

Molecular level studies using radioactive tracer materials in biological and non-biologic systems.

Subsurface microbiology including the physiology and ecology of subsurface microorganisms, degradation of organic contaminants and bioremediation, enzymatic reduction of metals, and biogeochemical cycling of nutrients.

Investigation of macromolecular structure and dynamics: modeling of radiation (or chemically) damaged DNA; study the effects of tumor formation and biological systems; study of materials that concentrate or detoxify pollutants from the environment.

Development of instrumentation and analytical methods.

Characterizing and monitoring aquatic and terrestrial ecosystems through the development and deployment of new technologies and methods.

Researching impacts of water use practices on fisheries and wildlife and the response of aquatic ecosystems to engineered structures and to natural and man-induced stresses.

Research to promote the understanding of the chemical and biological processes that govern the mobility and degradation of a range of inorganic, radionuclide and organic contaminants in soils, sediments, and ground water systems.

Measurements of exposures to physical, radiological, and chemical agents.

Developing technology for the separation, purification, production, and delivery of medically useful

isotopes.

4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Am	241	4.51E-01
Am	243	1.86E-01
Ba	133	1.00E-02
C-	14	7.74E-01
Ca	45	2.00E-01
Cd	109	2.00E-01
Cm	248	4.20E-05
Co	57	2.00E-01
Co	60	2.00E-01
Cr	51	2.00E-01
Cs	137	2.25E-01
Eu	152	1.20E-01
Fe	55	2.00E-01
Fe	59	2.00E-01
H-	3	1.26E+01
I-	125	1.00E+00
I-	131	5.01E-01
Mn	54	2.00E-01
Ni	63	2.00E-01
Np	237	3.67E-01
P-	32	1.00E+01
P-	33	2.00E-01
Pu	238	1.71E+00
Pu	239	6.29E-01
Pu	240	1.03E-01
Pu	241	1.69E+00
Pu	242	4.59E-02
S-	35	1.52E+02
Sr	85	1.20E-01
Sr	90	1.00E+02
Tc	99	9.27E+02
Tc	99 in	2.00E+01
Th	232	9.81E-01
U-	235	1.87E-01
U-	238	1.15E+00
Y-	90	3.50E+01
Zn	65	2.00E-01

5) Emission unit EP 331-01-V must use an isokinetic sampling probe with design specifications meeting ANSI N 13.1.

6) Stack emissions will be sampled for particulate matter containing alpha and beta activity using methods prescribed within Environmental Protection Agency Methods A-4 and B-4, and analyzed for gross alpha and gross beta activity, and specific radionuclides, as required.

- 7) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5) and 246-247-060(5)).
- 8) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 9) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 10) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 11) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 12) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 13) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 14) The Department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 15) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 16) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. (WAC 246-247-080(2)).
- 17) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 18) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 19) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with WAC 246-247-080 (8).

(WAC 246-247-080 (6))

- 20) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 21) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 22) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 23) The emission unit monitoring system shall have the following activities performed:

Within two years of this approval, and annually thereafter:

- a. A visual check of nozzle position and orientation as well as measurements of nozzle openings;
- b. Checks to ensure the tightness of all fittings and connections as well as a leak test of the entire sampling system; and
- c. Visual inspections for corrosion, physical damage, or dust loading of the probe, sample lines, and monitoring system equipment.

Annually starting within one year of this approval:

- d. A functional/calibration check of monitoring system instrumentation shall be performed; and
- e. USDOE shall provide to WDOH for review copies of the procedures used to perform the above activities.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: WASTE ENCAPSULATION AND STORAGE FACILITY (WESF) LIQUID
LOW LEVEL RADIOACTIVE LIQUID REMOVAL FROM TANK 100.**

Date Approved: 13-Dec-02

Emission Unit Name: 296-B-10

Emission Unit ID 340

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT

ALARACT [WAC 246-247-040(4)]

BARCT [WAC 246-247-040(3)]

Zone or Area	Abatement Technology	Required # of Units	Additional Description/Conditions
K-1 Filter Bldg.	Prefilter	2	In series
K-1 Filter Bldg.	HEPA	2	In series
K-1 Filter Bldg.	Fan	1	2 in parallel
K-3 Filter Pit	Demister	1	
K-3 Filter Pit	Heater	1	
K-3 Filter Pit	Impingement Vanes	1	
K-3 Filter Pit	HEPA	2	2 parallel flow paths, in-series
K-3 Filter Pit	Fan	1	2 parallel paths (1 in-use, 1 backup)

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4) & WAC 246-247-75(2)	Method 2 appendix A Method 114 appendix B 61.93(b)(2)(ii) ANSI N13.1	All radionuclides which could contribute 10% of the potential EDE.	Continuous

Sampling Requirements: Continuous

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

02/26/1998 NOC Shortform approval on February 26, 1998.

01/19/1999 NOC Revision Form approved on January 19, 1999, to adjust actual/planned work start/stop times.

08/29/2002 AOP Administrative Amendments received July 24, 2001 and October 29, 2001 to obsolete conditions. New Conditions and Limitations AIR 02-1218 mailed on December 13, 2002.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $1.75\text{E-}05$ mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to $3.51\text{E-}02$ mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**
modification and continuous operations of the Waste Encapsulation and Storage Facility (WESF) liquid low level radioactive (LLLW) stream piping. The tank TK-100 serves as a catch tank for liquid low level radioactive waste streams originating from WESF, condensate from the K-1 and K-3 filter pits, and the 296-B-10 stack. TK-100 is ventilated through the WESF K-3 ventilation system and out of the 296-B-10 Stack.

The contents of TK-100 are emptied by pumping the LLLW to a tanker truck at the Truck Load-Out Port. In the event that additional storage capacity is needed, a new portable aboveground storage tank (nominal capacity of 4,000 gallons) will be installed at the Truck Load-Out Port and vented to TK-100 during filling operations. After filling the portable aboveground storage tank, the tank will be disconnected from the Truck Load-Out Port, a HEPA or NucFil filter shall be installed, and then the tank will be moved outside for storage until arrangements are made to dispose of the excess LLLW.

During normal operations the LLLW streams to TK-100 are less than 0.001 curie/liter of Sr-90 and Cs-137. In the event that the TK-100 contents are greater than or equal to 0.001 curie/liter of Sr-90 and Cs-137 during routine operations, a WESF Ion Exchange Module will be installed at the Truck Load-Out Port and the contents of TK-100 will be recirculated through the WESF Ion Exchange Module until the concentration is less than 0.001 curie/liter of Sr-90 and Cs-137. The WESF Ion Exchange Module will be vented to TK-100 during recirculation. Storage of the WESF Ion Exchange Module will normally be outdoors and will vent to atmosphere through a HEPA or NucFil filter. Use of the WESF Ion Exchange Module will continue up to a maximum loading of 20,000 curies of Sr-90 or 25,000 curies of Cs-137.

In addition, certain piping modifications will be made to the current WESF LLLW system. They are as follows:

A. TK-50 Vault

- Remove existing Tank 50 Vault Piping.
- Remove remaining equipment (e.g., Tank 50, Heat Exchanger, Pumps) if possible, and all other equipment and debris in the vault.
- Install new pipe.

B. Valve Pit 225B-VP-05

- Remove 3-way valve.
- Blank off line to B-Plant.
- Install new pipe elbow.

- 4) This NOC does not have "Annual Possession Quantity" limits.
- 5) **This condition was obsoleted on 10/29/2001.** The following ALARACT Standards apply to this activity. WAC 246-247-130 Appendix C, "ALARA References".
Obsoleted via Administrative Amendments received July 30, 2001 and October 29, 2001.
- 6) **This condition was obsoleted on 10/29/2001.** The tank is considered a non-sealed, non-airtight source during the transport activity and the calculated PTE includes all phases of this activity.
Obsoleted via Administrative Amendments received July 30, 2001 and October 29, 2001.
- 7) **This condition was obsoleted on 04/17/2000.** Emission will be monitored using the near field monitors located around B Plant/WESF and reported in the annual radionuclide air emissions report for the Hanford Site.
- 8) **This condition was obsoleted on 10/29/2001.** The contamination controls requirements for DOE/RL-96-75 will apply. This emission unit will be tracked using, as a guide, DOE/RL-96-75 and reported separate from those listed in DOE/RL-96-7.
Obsoleted via Administrative Amendments received July 30, 2001 and October 29, 2001.
- 9) **This condition was obsoleted on 08/05/1999.** Upon further discussion with the owner/operator, this activity has an expected completion date prior to December 31, 1998. Therefore, this NOC approval will expire on that date. DOH shall be notified within 90 days of the completion of this activity.
- 10) **This condition was obsoleted on 10/29/2001.** Levels on the outside of the tank transport packaging will be less than 2,000 dpm/100 cm² Alpha.
Obsoleted via Administrative Amendments received July 30, 2001 and October 29, 2001.
- 11) **This condition was obsoleted on 10/29/2001.** Description of "mechanical plugs" will be provided to DOH for review and approval (via signed meeting minutes) prior to the activity.
Obsoleted via Administrative Amendments received July 30, 2001 and October 29, 2001.
- 12) **This condition was obsoleted on 10/29/2001.** DOH considers the temporary framed plastic enclosure with HEPA filtration is the primary control device for this activity. Glovebags used during cutting of the piping will be considered occupational safety controls.
Obsoleted via Administrative Amendments received July 30, 2001 and October 29, 2001.
- 13) **This condition was obsoleted on 04/17/2000.** Low emissions from contingency storage will be verified by annual linear samples on the exhaust outlets to meet periodic confirmatory requirements.
- 14) **This condition was obsoleted on 10/29/2001.** Structural analysis of the tank integrity using the mass of the contents will be performed and provided to DOH for review and approval (via signed meeting minutes) prior to the tank lift.
Obsoleted via Administrative Amendments received July 30, 2001 and October 29, 2001.
- 15) **This condition was obsoleted on 04/17/2000.** HPTs will perform surveys while work progresses.
- 16) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5) and 246-247-060(5)).
- 17) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).

- 18) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 19) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 20) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 21) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 22) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 23) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 24) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 25) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 26) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 27) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 28) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6)).

- 29) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 30) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 31) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: CONSTRUCTION AND OPERATION OF THE 200 AREA INTERIM
STORAGE AREA (ISA)**

Date Approved: 24-Jul-02

Emission Unit Name: 200 AREA INTERIM STORAGE AREA (ISA)

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: None

ALARACT [WAC 246-247-040(4)]

BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
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Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
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40 CFR 61.93(b)(4)(i) &
WAC 246-247-075(3)

Annual

Sampling Requirements: Smear Survey

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

05/20/1998 Original NOC approved on May 20, 1998 via AIR 98-503.

05/07/2002 NOC Revision approved on May 7, 2002 to provide condition changes/clarifications. New approval letter issued via AIR 02-709 on July 24, 2002.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 1.92E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 1.92E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 3) **This process is limited to:**
the construction and operation of the 200 Area ISA. The 200 Area ISA will be constructed and operated for the interim storage of non-defense production reactor SNF in dry cask storage systems (DCSSs).

3) This process is limited to:

[Note: Dry cask storage system is a generic term referring to the various storage systems employed for SNF storage at the 200 Area ISA and does not refer to a specific storage system.]

Dry Cask Storage System Interim Storage

Once the DCSSs are prepared for interim storage the systems can be transferred to the 200 Area ISA for interim storage. Up to sixty Interim Storage Casks (ISCs) storing FFTF SNF, 7 NAC-1 casks storing LWR SNF, and 12 NRF TRIGA casks and 2 DOT-6M containers storing TRIGA<tm> SNF will be required for storage at the 200 Area ISA. Each of the dry cask storage systems will be transported via road to the 200 Area ISA and unloaded using a mobile crane. Each DCSS will be placed at a specific location within the 200 Area ISA.

Dry Cask Storage System Equipment

Different DCSSs are utilized for the different SNF types to be stored at the 200 Area ISA to accommodate the particular characteristics of the SNF. The FFTF SNF DCSS, the NRF TRIGA SNF DCSS, and the LWR SNF DCSS.

200 Area ISA Design and Construction

The 200 Area ISA consists of concrete pads, perimeter fencing and lighting, access for transporters and mobile cranes, and conduit for potential future electrical service and instrumentation. This construction will not involve contaminated items. The 200 Area ISA will be situated within the current CSB construction site. This site is currently not a radiological area nor does it contain an underground radioactive material area. No contaminated excavation will be involved.

4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Am 241	6.89E+04	Am 242 m	2.71E+03	Am 242	2.69E+03
Am 243	8.96E+01	Ba 137 m	2.98E+06	C 14	2.70E+01
Cd 113 m	9.17E+01	Ce 144	4.15E+05	Cm 242	2.91E+03
Cm 243	7.35E+01	Cm 244	8.45E+03	Co 60	5.59E+04
Cs 134	3.69E+05	Cs 137	3.14E+06	Eu 154	8.84E+04
Eu 155	2.66E+05	Fe 55	4.75E+04	H 3	1.76E+04
I 129	1.53E+00	Kr 85	1.54E+05	Mn 54	4.49E+04
Ni 63	4.32E+03	Np 237	9.38E-01	Np 239	8.96E+01
Pm 147	2.27E+06	Pr 144	4.15E+05	Pr 144 m	5.42E+03
Pu 238	4.02E+04	Pu 239	1.31E+05	Pu 240	1.15E+05
Pu 241	4.39E+06	Pu 242	6.57E+00	Rh 106	1.30E+06
Ru 106	1.30E+06	Sb 125	2.85E+05	Sm 151	1.22E+05
Sr 90	1.21E+06	Tc 99	3.65E+01	Te 125- m	6.96E+04
U 234	3.54E+00	U 235	5.64E-02	U 238	7.53E-01
U 238	9.15E-01	Y 90	1.21E+06		

5) The NOC constitutes a contract between the department and the facility. Any changes must be approved by the department.

- 6) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 7) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 8) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 9) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 10) **This condition was obsoleted on 5/20/2002.** The department reserves the right to conduct an environmental surveillance program around this emission unit and to require the facility to conduct or modify its own environmental monitoring program (WAC 246-247-075(9)).
Replaced by new standard Condition/Limitation on May 20, 2002.
- 11) **This condition was obsoleted on 5/20/2002.** This project must be included in the next revision of the Air Operating Permit, if active at that time (WAC 246-247-060(1)(e)).
Obsoleted by issuance of the Hanford Site Air Operating Permit.
- 12) There are no preoperational tests planned for this unit, so the requirement for notification at least seven days prior to such testing under (WAC 246-247-060(4)) will not apply.
- 13) The emission limit for this emission unit is no smearable contamination above 2200 dpm/100 cm² Beta-Gamma or 220 dpm/100 cm² Alpha using standard portable instruments used, and survey methods followed at Hanford (WAC 246-247-040(5)).
- 14) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 15) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 16) Nothing may be inferred that is not specifically described in this NOC.
- 17) Periodic confirmatory monitoring shall consist of annual smears or swipes of the outer surfaces of the containers using hand held survey instruments capable of detecting contamination above 2200 dpm/100 cm² Beta-Gamma or 220 dpm/100 cm² Alpha.
- 18) Any detectable contamination above 2200 dpm/100 cm² Beta-Gamma or 220 dpm/100 cm² Alpha as a result of the ISA specific monitoring shall be reported to the department.
- 19) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 20) If construction is not commenced within two years from the date of this letter, the approval is void.
- 21) **This condition was obsoleted on 5/20/2002.** Storage at this location is limited to that describe in Section 5.1 of the NOC.
Replaced by new standard Condition/Limitation on May 20, 2002.
- 22) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 23) The facility must be able to demonstrate workers associated with this emission unit are trained in the

use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).

- 24) The Department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 25) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 26) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 27) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

- 28) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 29) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

PROJECT TITLE: OPERATION OF THE 242-A EVAPORATOR EMISSION UNIT 296-A-22

Emission Unit Name: 296-A-22

Emission Unit ID 142

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: ALARACT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
	Heater	1	
	HEPA	2	In series
	Fan	1	Fan operates during 242-A processing.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Federal and State Regulatory</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
10 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	During campaigns: Method 2 appendix A Method appendix B 61.93(b)(2)(ii) ANSI N13.1: During non-campaigns Appendix B, Method 114(3)	Campaign: TOTAL ALPHA, TOTAL BETA, 137Cs, 90Sr, 239Pu, 238Pu, 241Am, I-129 and any other radionuclides which could contribute 10% of the potential TEDE. Non- Campaign: Total Alpha, Total Beta, and Cs-137.	One week sample per quarter, and continuous sampling during campaign

Sampling Requirements: Record Sample

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

07/09/1998 AIR 98-704 dated July 07, 1998 approved the downgrading of the 296-A-22 emission unit.

08/24/1998 AIR 98-808 dated August 24, 1998 corrects a misidentified isotope, and clarifies a monitoring requirement for I-129 that appeared in an earlier WDOH letter (AIR 98-704). The isotope should be Pu-239 and not Pu-238. Monitoring for I-129 needs to occur only when this isotope exceeds 10% of the PTE.

08/12/2004 AIR 04-812 replaces AIR 98-704 and AIR 98-808.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC

246-247-060(5)).

- 2) The total abated emission limit for this Notice of Construction is limited to $1.00\text{E-}09$ mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to $3.20\text{E-}06$ mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 3) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted.

The 242-A Evaporator facility is used to reduce the volume of waste solutions that do not self-boil, and thus reduce the number of underground double-shell tanks required for waste storage. The 242-A Evaporator employs a conventional forced-circulation, vacuum evaporation system to concentrate radioactive waste solutions. Principal process components of the evaporator system are located in the 242-A Building. They include the reboiler, vapor-liquid separator, recirculation pump and pipe loop, slurry product pump, condensers, and vessel ventilation system.

The evaporator system receives a mixed blend feed from the feed tank. The feed consists of unprocessed and processed waste and recycled liquid that are removed from storage tanks after solids have settled. The feed is pumped into the recirculation line and blended with the main product slurry stream, which flows to the reboiler via the recirculation pump. The mixture is heated in the reboiler. The vapor liquid separator is maintained at a reduced pressure. Under this reduced pressure, a fraction of the water in the heated slurry flashes to steam and is drawn through two wire mesh deentrainer pads into a vapor line that leads to the primary condenser. As evaporation takes place in the separator vessel, the slurry becomes concentrated. When the process solution has been concentrated to the parameters specified by the campaigns process memo, a fraction is withdrawn from the upper recirculation line, upstream of the feed addition point, and is either gravity drained or pumped by the slurry pump to underground storage tanks.

Vapors removed from the vapor-liquid separator via the vapor line are condensed and routed to the condensate collection tank. The process condensate is discharged to the Liquid Effluent Retention Facility (LERF). Steam condensate is continuously monitored for excessive radiation, pH, and conductivity, and then discharged from the building to the 200 Area Treated Effluent Disposal Facility (TEDF). Upon detection of radioactive contamination, the radiation monitor will automatically divert the steam condensate stream to the feed tank. Cooling water from the condensers, which is also continuously monitored for excessive radiation, pH, and conductivity, is also discharged to the 200 Area TEDF. This used cooling water stream cannot be diverted, thus, if contamination is detected, an evaporator shutdown is required. Non-condensable vapors from the evaporator are filtered and discharged to the atmosphere via the vessel vent system. This system consists of a deentrainment pad, prefilter, heater, high-efficiency filter assembly, and vessel vent exhanster.

4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Am - 241	3.50E+04	C - 14	1.80E+05	Cm 244	4.50E+02
Co - 60	4.20E+04	Cs - 134	5.20E+05	Cs - 137	5.20E+07
Eu - 154	1.70E+05	Eu - 155	2.40E+05	I 129	9.10E+01
Nb - 94	3.40E+03	Pu - 238	4.50E+01	Pu 239/240	5.60E+03
Pu - 241	5.20E+05	Ra - 226	1.10E+03	Ru - 106	1.80E+06
Se - 79	2.70E+03	Sr - 90	7.70E+06	Tc - 99	7.00E+04

- 5) This condition was obsoleted on 8/12/2004. Periodic confirmatory monitoring requirements

during years with campaigns include.

A minimum of one sample in a quarter prior to each campaign.

A minimum of one sample during the campaign runs.

A minimum of one sample during the quarter preceeding the campaign run.

Original condition added by AIR 98-704. Approval updated to standard format by AIR 04-812

- 6) **This condition was obsoleted on 8/12/2004.** Periodic confirmatory monitoring requirements during years with no campaigns include:

A total of four weeks of sampling data for each non-operating year.

Analysis for total alpha, total beta, and Cs-137.

Original condition added by AIR 98-704. Approval updated to standard format by AIR 04-812

- 7) The monitoring system must be NESIAPs compliant and operating in compliance with NESHAPs and WAC 246-247 designated stack requirements when it is operating.

- 8) **This condition was obsoleted on 8/24/1998.** Sampling for total alpha, total beta, Cs-137, Sr-90, Pu-239(sic), Pu-238, I-129, Am-241 and any other specific radionuclides contributing to 10% of the potential-to-emit for each campaign

Original condition added by AIR 98-704. Approval updated to standard format by AIR 04-812.

- 9) Monitoring for I-129 needs to occur only when this isotope exceeds 10% of the PTE

- 10) **This condition was obsoleted on 8/12/2004.** Sampling for total alpha, total beta, Cs-137, Sr-90, Pu-239, Pu-238, I-129, Am-241 and any other specific radionuclides contributing to 10% of the potential-to-emit for each campaign

Condition added by AIR 98-808. Approval updated to standard format by AIR 04-812.

- 11) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 12) The facility shall notify the department at least seven calendar days prior to any planned preoperational tests of new or modified emission units that involve emissions control, monitoring, or containment systems of the emission unit(s). The department reserves the right to witness or require preoperational tests involving the emissions control, monitoring, or containment systems of the emissions unit(s) (WAC 246-247-060(4)).
- 13) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6))
- 14) The department may require the owner or operator of an emission unit to make provision, at existing emission unit sampling stations, for the department to take split or collocated samples of the emissions. (WAC 246-247-075 (10))
- 15) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).

- 16) All facilities must be able to demonstrate the reliability and accuracy of the radioactive air emissions monitoring data (WAC 246-247-075(13)).
- 17) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 18) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 19) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 20) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 21) The facility shall notify the department within twenty-four hours of any shutdown, or of any transient abnormal condition lasting more than four hours or other change in facility operations which, if allowed to persist, would result in emissions of radioactive material in excess of applicable standards or license requirements (WAC 246-247-080(5)).
- 22) The facility shall file a report of closure with the department whenever operations producing emissions of radioactive material are permanently ceased at any emission unit (except temporary emission units) regulated under this chapter. The closure report shall indicate whether, despite cessation of operations, there is still a potential for radioactive air emissions and a need for an active or passive ventilation system with emission control and/or monitoring devices. If decommissioning is planned and will constitute a modification, a NOC is required, as applicable, in accordance with WAC 246-247-060. (WAC 246-247-080(6))
- 23) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 24) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 25) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 26) All radioactive air emissions licenses issued by the department, except those issued to radioactive materials licensees, shall have an expiration date of five years from date of issuance or as specified in the Air Operating Permit. For radioactive material licensees, the requirements and limitations for the operation of emission units shall be incorporated into their radioactive materials license, and shall expire when the radioactive materials license expires (WAC 246-247-060(6)).
- 27) All facilities with licensed emission units, except for radioactive materials licensees, shall submit a request to the department for renewal of their radioactive air emissions license at least sixty days prior

to expiration of the license or as required by the Air Operating Permit. All renewal requests shall include a summary of the operational status of all emission units, the status of facility compliance with the standards of WAC 246-247-040, and the status of any corrective actions necessary to achieve compliance with the requirements of this chapter. Facilities with licensed emission units that also hold a radioactive materials license issued by the department shall submit this information along with their radioactive material license renewal submittal. If the department is unable to renew a radioactive air emissions license before its expiration date, the existing license, with all of its requirements and limitations, remains in force until the department either renews or revokes the license (WAC 246-247-060(9)).

- 28) The department may conduct an environmental surveillance program to ensure that radiation doses to the public from emission units are in compliance with applicable standards. The department may require the operator of any emission unit to conduct stack sampling, ambient air monitoring, or other testing as necessary to demonstrate compliance with the standards in WAC 246-247-040 (WAC 246-247-075(9))

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

PROJECT TITLE: CANISTER STORAGE BUILDING, BUILDING 212-H

Date Approved: 29-Jul-02
Emission Unit Name: 296-H-212 (CSB)

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	HEPA	2	double stage, operates in parallel, one HEPA at a time and one in backup mode
	Fan	2	operates in parallel, one fan at a time and one in backup mode

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Appendix B, Method 114(3)	All radionuclides which could contribute 10% of the potential EDE.	Count the record filter annually (either a destructive or non-destructive technique) using a gamma spectrometer calibrated to Cs-137.

There are no sampling requirements.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

01/11/1996 Original approval granted for phase I of construction of the Canister Storage Building approved via AIR 96-103 on January 11, 1996. (NOC ID 142)

07/27/2001 NOC Revision (HNF-7880) received May 30, 2001, to provide inclusion of shipping port fuel from storage at T Plant and fuel from F and H Reactor Basins. Approval letter AIR 01-711, mailed on July 30, 2001.

05/08/2001 NOC Revision Form approved on May 8, 2001, to provide a condition change/clarification.

05/01/2001 Combined NOC ID 208 into NOC ID 289.

12/01/2000 NOC revision form submitted November 27, 2000. Approved via AIR 00-1201.

Printed on 26-Jul-02

07/30/1998 Original approval granted for phase II of construction of the Canister Storage Building via AIR 98-710 on July 30, 1998.

04/06/1998 Approval to modify sampling system granted via letter AIR 98-401 dated April 6, 1998. (NOC ID 142)

05/07/2002 Conditions and Limitations, AIR 02-708, mailed on July 24, 2002 to document change requested by the administrative amendment (02-RCA-0327) for the Air Operating Permit, received on May 3, 2002, to rename emission unit. Also to provide Conditions and Limitations for the NOC Revision Form approved on May 7, 2002 to provide a condition change/clarification.

07/29/2002 AIR 02-713 mailed on July 29, 2002 to void AIR 02-708. Computer error did not print all conditions on report.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $1.64\text{E-}02$ mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to $3.64\text{E}+01$ mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 3) **This process is limited to:**
the use of the Canister Storage Building (CSB) for storage of spent nuclear fuel (SNF). The CSB shall consist of load-in/load-out areas, mechanical and electrical support areas, a multi-canister overpack (MCO) weld/sample station, and a subgrade vault storage area. The SNF shall be received in MCOs that shall be shipped in a cask.

The subgrade reinforced concrete vault area shall accommodate three equal-sized, below grade compartments with each compartment cooled by natural convection and having separate air inlet and exhaust plenums. Because there is physical separation from the SNF source term to the air space in this below grade vault, there is no control technology or emission monitoring of the exhaust from this area. The physical separation shall consist of the following barriers: MCO and storage tube.

Over the vault shall be a structural steel and metal sided building with heating and ventilation systems, and a material handling machine for use in the handling and movement of MCOs. The air space above the operating deck shall be at a negative pressure with respect to atmosphere during all MCO handling, storage, and monitoring operations. The exhaust from this portion of the building ventilation system shall be filtered by testable high-efficiency particulate air (HEPA) filters and sampled before exhausting through a separate building operating area stack. An operating deck shall separate the subgrade vault from the above grade level working area.

A continuous air emission monitoring system (CAEMS) shall be installed in the process exhaust stack.

There shall be no more than 226 penetration holes in the operating deck in each of the three compartments in the vaulted area. MCOs containing the SNF shall be stored in the 226 vertical steel storage tubes in the north vault (also known as vault 1). Vaults 2 and 3 shall be used for the storage of sealed/immobilized high-level waste.

The steel storage tubes shall prevent migration of radiological contamination and shall be inserted through existing penetrations and extend from the operating deck to the floor of the vault. Access to the interior of the tubes shall be through penetrations in the operating deck. Each tube shall contain no more than two MCOs and be equipped with a shield plug that shall be vented to the operating deck but which can also be isolated.

The function of the MCO shall be to confine, contain, and maintain the SNF in a critically safe array to ensure safe operations and to support processing the 105 K Basins SNF at the Cold Vacuum Drying Facility, processing the Shippingport PWR SNF at the T Plant, and transport to the CSB.

A cover cap shall be welded on top of the MCO covering the MCO shield plug. This shall be performed at the sample and weld station located in the CSB, thus hermetically sealing the SNF contained in the MCO.

The sampling and weld station shall be located at the south end of the CSB operating area. This area shall consist of seven process pits, four feet in diameter and 19 feet 8 inches deep. Two of the pits shall be equipped for MCO gas sampling and for welding the cover caps on the MCOs. Weld inspection and helium leak checking of the seal weld shall also be accomplished here.

An exhaust enclosure shall be provided for confinement around the top of the MCO during sampling and welding. The function of the enclosure shall be to capture any potential airborne contamination. Airflow shall be into the enclosure. An exhaust duct shall run from the enclosure to a fan and through a testable HEPA filter that shall exhaust into the building ventilation exhaust system for the CSB operating area upstream of the building exhaust testable HEPA filters.

The tube vent and purge cart will house the storage tube purge system, which shall monitor and maintain an inert gas environment around any MCO placed in the overpack storage tubes and to monitor the atmosphere in any of the other storage tubes as required. The vent and purge cart may be driven to any of the 226 storage tubes.

The vent and purge cart equipment shall include inert gas supply cylinders, flexible steel hoses, an airtight sampling connection, a radioactive gas monitor, a hydrogen gas monitor and associated interlocks and alarms, a vacuum pump and its cooling unit, a HEPA filter, and an oxygen monitor and associated alarms.

The heating, ventilation, and air conditioning (HVAC) system shall provide contamination confinement and contamination control within the CSB. The HVAC system shall provide a controlled pressure gradient flow of air from outside the CSB inward through uncontaminated areas to potentially contaminated areas of the building and out through HEPA filters and a monitored exhaust.

4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Ag	110	m	2.14E-02
Ag	110		2.84E-04
Am	241		4.28E+05
Am	242	m	6.95E+02
Am	242		6.95E+02
Am	243		3.40E+02
Ba	137	m	1.29E+07

C	14	8.13E+02
Cd	113 m	3.72E+03
Ce	144	9.14E+02
Cm	242	5.82E+02
Cm	243	1.40E+02
Cm	244	9.24E+03
Co	60	9.06E+03
Cs	134	1.59E+04
Cs	135	7.75E+01
Cs	137	1.36E+07
Eu	152	9.45E+02
Eu	154	1.16E+05
Eu	155	2.32E+05
Fe	55	2.41E+03
Gd	153	1.28E-04
H	3	7.20E+04
I	129	1.20E+01
In	113 m	2.14E-07
Kr	85	1.18E+06
Nb	93 m	2.47E+02
Nb	95	3.74E-12
Nb	95 m	1.25E-14
Ni	59	5.21E+02
Ni	63	5.55E+04
Np	237	5.72E+01
Np	239	2.20E+02
Pd	107	1.63E+01
Pm	147	4.62E+05
Pr	144	9.03E+02
Pr	144 m	1.10E+01
Pu	238	1.40E+05
Pu	239	2.23E+05
Pu	240	1.26E+05
Pu	241	7.19E+06
Pu	242	5.49E+01
Rh	106	1.82E+03
Ru	106	1.82E+03
Sb	124	3.03E-18
Sb	125	3.35E+04
Sb	126	2.18E+01
Sb	126 m	1.56E+02
Se	79	8.62E+01
Sm	151	1.79E+05
Sn	113	2.14E-07
Sn	119 m	2.97E-01
Sn	121 m	7.96E+01

Sn	123	1.74E-05
Sn	126	1.56E+02
Sr	89	1.01E+07
Sr	90	1.03E+07
Tb	160	2.77E-15
Tc	99	2.99E+03
Te	123 m	2.76E-11
Te	125 m	8.18E+03
Te	127 m	9.69E-07
Te	127	9.49E-07
Te	129 m	0.00E+00
U	234	8.74E+02
U	235	3.37E+01
U	236	1.27E+02
U	238	6.96E+02
Y	90	1.03E+07
Y	91	2.23E-14
Zr	93	4.00E+02
Zr	95	1.69E-12

- 5) Report measured or calculated emissions annually (WAC 246-247-080(3)).
- 6) Nothing may be inferred that is not specifically described in the NOC.
- 7) The department must approve any deviation from required or recommended monitoring standards.
- 8) **This condition was obsoleted on 5/8/2001.** Continuous monitoring must be in place prior to operating. This will include continuous ambient air sampling for this project.
Obsoleted by NOC Revision Form approved on May 8, 2001 to clarify condition
- 9) All Conditions and Limitations must be proceduralized prior to the implementation of this NOC.
- 10) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from the facility (WAC 246-247-075(13)) and (WAC 246-247-075(6)). The facility must demonstrate that it has a quality assurance program compatible with applicable national standards listed in, or equivalent to, those listed in the above cited regulation.
- 11) The process for validating the process parameters with respect to storing the MCOs in a sealed configuration is approved, however, the total number of representative samples was not given to us. By telephone, it was indicated that the total number of MCOs tested should not exceed twelve. Twelve is the limit, unless a more specific number is negotiated with the department.
- 12) Report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist (or lasts more than four hours), would result in the emissions of radionuclides in excess of any standards or limitations in the license. (Note: Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitations included in the approval (paragraph 5)).
- 13) The NOC constitutes a contract between the department and the facility. Any changes must be approved by the department.
- 14) Ventilation systems used to control the release of particulate airborne radiological contamination from

individual processes must include:

1. MHM cask extract ventilation and HEPA exhaust system.
2. Sampling/weld station ventilation and HEPA exhaust system.
3. Overpack storage tube purge system.
4. Temporary containment enclosure with HEPA exhaust system for contamination control.
5. The building HEPA filters are still required.
6. All controls must be ANSI N509/510 compliant

- 15) **This condition was obsoleted on 7/30/2001.** If construction is not commenced within two years from the date of this letter, the approval is void.
Construction commenced within the two year condition.
- 16) Preoperational tests planned for this unit, requirement for notification at least seven days prior to such testing under (WAC 246-247-060(4)) will apply.
- 17) All records required by WAC 246-247 must be readily (promptly) retrievable, and must be stored onsite at the facility. All records shall be maintained for a minimum of five years (WAC 246-247-080(8)).
- 18) Report any problems that could affect the monitoring ventilation or controls of this facility to the department.
- 19) The monitoring system must be ANSI N13.1 and ANSI N42.18 compliant.
- 20) Any deviation from the description of the modification or new construction, without approval of the department, may result in enforcement action under WAC 246-247-100.
- 21) The department reserves the right at any time to require the licensee to provide for split or collocated sampling of this emission unit (WAC 246-247-075(10)).
- 22) **This condition was obsoleted on 5/7/2002.** This approval, with its Conditions and Limitations, constitutes an amendment to the Department's Radioactive Air Emissions License, and must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(e) and (2)(c)).
Obsoleted by issuance of the Hanford Site Air Operating Permit.
- 23) If the department finds that the emission unit described in this NOC is not in compliance with the standards in WAC 246-247-040 during construction and/or operation, the department will require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
- 24) The department reserves the right to conduct an environmental surveillance program around this emission unit and to require the facility to conduct or modify its own environmental monitoring program (WAC 246-247-075(9)).
- 25) **This condition was obsoleted on 5/7/2002.** Continuous monitoring must be in place prior to operating. This will include continuous ambient air sampling for this project. The ambient air monitors shall be checked for operability at least once per week, and if an ambient air monitor is found not operating, the ambient air monitor shall be returned to service within seven working days from when it was found not operating. Notification to DOH per (WAC 246-247-080(5)) is required when an ambient air monitor is shut down for more than seven consecutive working days from time of discovery. At that time of discovery, operations involving the handling of spent nuclear fuel shall be suspended until the ambient monitor is returned to service.
Added by NOC Revision Form approved on May 8, 2001 to clarify condition. Obsoleted by NOC Revision Form approved on May 7, 2002.
- 26) The differential pressure shall be monitored and recorded daily during operational rounds to determine

impacts due to moisture. If the differential pressures are outside of the designed operating range, the cause will be determined and the department will be notified within 24 hours.

- 27) Total system flow shall not exceed 9,000 CFM (allowing for the tolerances of the measuring devices).
- 28) DOE shall develop, and submit to WDOH for approval, criteria for an annual DOE inspection of this unit.
- 29) This annual inspection shall be reviewed and accepted by a Washington State Certified Professional Engineer working for DOE or its contractor.
- 30) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

- 31) Continuous monitoring must be in place prior to operating. This will include continuous ambient air sampling for this project. The ambient air monitors shall be checked for operability at least once per week, and if an ambient air monitor is found not operating, the ambient air monitor shall be returned to service within seven working days from when it was found not operating. Notification to DOH per (WAC 246-247-080(5)) is required when an ambient air monitor is shut down for more than seven consecutive working days from time of discovery. At that time, i.e. when the ambient air monitor is shut down for more than seven consecutive days from time of discovery, operations involving the handling of spent nuclear fuel shall be suspended until the ambient air monitor is returned to service.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

PROJECT TITLE: 241-AV AND 241-AZ VENTILATION UPGRADES

Date Approved: 31-Dec-02

Emission Unit Name: 296-A-42

Emission Unit ID 93

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4)]

BARCT [WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
	Condenser	1	
	HEME	1	
	Heater	1	2 parallel flow paths with 1 operational
	HEPA	2	Before and After the HEGA (gas absorber) 2 parallel flow paths
	HEGA	1	2 parallel flow paths
	Fan	1	2 parallel flow paths

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Federal and State Regulatory</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
40 CFR 61.93(b)(4) & WAC 246-247-75(2)	Method 2 appendix A Method 114 appendix B 61.93(b)(2)(ii) ANSI N13.1	All radionuclides which could contribute 10% of the potential TEDE.	Continuous
Sampling Requirements: Continuous			

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

05/05/1994 Original (94-RPS-150 dated March 2, 1994) approval given via AIR 94-502 on May 5, 1994.

07/11/1996 Revision of NOC was approved via AIR 96-705 on July 11, 1996

06/30/1998 Modification of NOC (DOE/RL-98-27, Revision 0) was approved via AIR 98-613 on June 30, 1998. (approval retracted on July 8, 1998).

07/10/1998 NOC DOE/RL-98-27, Revision 0 approved on July 10, 1998 via AIR 98-708.

08/18/1998 Clarification of conditions were approved through meeting minutes dated August 18, 1998.

01/19/1999 NOC revision form approved January 19, 1999.

Printed on 06-Jan-03

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $1.80\text{E-}03$ mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to $3.20\text{E}+03$ mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).

- 3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**

the ventilation of the 241-AY and 241-AZ Tank Farms which each contain two double-shell tanks (DSTs). A DST consists of a concrete shell and dome, insulating concrete base, and two steel liners. The primary (inner) steel liner and outer steel liner are separated by a 0.76 meter annulus. Both liners are contained inside the shell. The tanks have a flat bottom with a useable depth of 9.28 meters, allowing a tank to contain 3,800,000 liters of waste.

The 241-AY and 241-AZ tanks contain mixed waste in the form of liquids or contained solids (suspended or settled). As part of the treatment and storage process, the contents in each of the four tanks could be mixed periodically to control gas entrapment in the settled solids, to control temperature, for chemical treatment, or for waste retrieval. Contained solids are mobilized, as required, as part of this process by hydraulic action of the mixer pumps or by use of air lift circulators in each of the tanks. Mobilization of contained solids normally occurs in a single tank in each farm at a time. During such activities, as well as during storage, the ventilation system shall maintain the vapor space in each tank below atmospheric pressure.

Air flow is from the tank to a glycol cooled recirculation system and to a common header. The common header is the point in the overall ventilation system at which ventilation flow is provided to the emissions control system. Also, a portion of each tank's exhaust can be recirculated to assist in maintaining temperature.

The recirculation system takes vapor from the tank, cools and condenses it to remove vapor and some entrained particulate, further removes moisture via a separator, and returns a portion of the cooled vapor to the tank. This provides cooling for the tank while reducing air emissions. Nominal flow rates in the recirculation system vary from zero cubic meter per second (bypassed) to 0.25 cubic meter per second per tank, at standard temperature and pressure conditions. At the higher flow rate, approximately 0.05 cubic meter per second is provided to the emissions control system before the remaining 0.2 cubic meter per second is recirculated to the tank. Similar air flow from the other three tanks is combined in the common ventilation header connecting the discharges of the other recirculation coolant systems. The combined flow is discharged to the emissions control system. The recirculation system is considered part of the process because the collected material is returned to the tank. The common header is considered the emission source.

When mixer pumps are operating in a tank the 0.25 cubic meter per second drawn from the tank may not be recirculated but may be combined with the flow from the other tanks for a total discharge to the emissions control system of 0.4 to 0.5 cubic meter per second. Numerous other combinations of discharge flow rates are possible but the combined annual average discharge flow rate to the emissions control system shall not be greater than 0.5 cubic meter per second. During system upset conditions, such as an automatic shutdown of one exhaust train and start of the opposite train, discharge flow rates could reach 0.6 cubic meter per second for several seconds.

The portion of the stream discharged to atmosphere shall flow through a condenser, high-efficiency mist eliminator, heater, two HEPA filters in series with a gas adsorption unit between the HEPAs. For the purpose of calculating abated emissions, only the HEPA filter control efficiencies are used. The annual average discharge flow rate is considered to be 0.5 cubic meter per second. Discharge flow rates can vary from 0.2 cubic meter per second to 0.5 cubic meter per second.

4) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac - 227	1.65E-02	Am - 241	7.34E+04	Am - 241	7.34E+04
Ba - 137 m	1.14E+07	C - 14	5.92E+01	Cd - 113 m	4.00E+03
Cm - 242	4.34E+01	Cm - 243	1.00E+01	Cm - 244	2.44E+02
Co - 60	9.55E+03	Cs - 134	8.50E+04	Cs - 137	1.22E+07
Eu - 152	5.15E+02	Eu - 154	9.15E+04	Eu - 155	1.44E+05
H - 3	1.53E+04	I - 129	9.61E+00	Nb - 93 m	2.46E+02
Ni - 59	8.57E+01	Ni - 63	9.00E+03	Np - 237	3.29E+01
Pa - 231	2.66E-02	Pu - 238	5.58E+02	Pu - 239	2.21E+03
Pu - 240	6.44E+02	Pu - 241	4.19E+04	Pu - 242	2.10E-01
Ra - 226	3.27E-03	Ra - 228	1.46E-01	Ru - 106	1.82E+05
Sb - 125	2.24E+05	Se - 79	9.76E+01	Sm - 151	3.37E+05
Sn - 126	1.55E+02	Sr - 90	1.79E+07	Tc - 99	2.11E+03
Th - 229	3.49E-03	Th - 232	1.45E-02	U - 232	6.15E-01
U - 233	2.36E+00	U - 234	4.61E+00	U - 235	1.79E-01
U - 236	3.29E-01	U - 238	3.54E+00	Y - 90	1.79E+07
Zr - 93	4.65E+02				

- 5) **This condition was obsoleted on 08/06/2002.** The monitoring system must be ANSI N13.1 and ANSI N42.18 compliant. It is understood the department has approved the system as an acceptable alternative method (Reference: AIR 98-108 and AIR 98-207).

NOC DOE/RL-98-27, Rev 0 approved on July 10, 1998 via AIR 98-708. Obsoleted as included in Monitoring and Sampling Requirements.

- 6) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).

- 7) **This condition was obsoleted on 08/06/2002.** WDOH Conditions and Limitations dated July 10, 1998 (AIR 98-708) are applicable. There are no new WDOH conditions that apply to this NOC.

NOC revision approved January 19, 1999. Replaced by standard conditions due to AOP Administrative Amendment approved August 6, 2002.

- 8) Any deviation from the description of the modification or new construction, without approval of the department, may result in enforcement action under WAC 246-247-100.

- 9) The ventilation flow rate is limited to a maximum of 0.5 cubic meters per second.

- 10) Abatement controls are those required to be in place at the point effluent enters the vapor space, not

necessarily at a common header. Therefore, the following are required control: the recirculating and cooling system coming off each tank, consisting of a condenser, evaporative tower, pump and moisture separator; a condenser at the common header, with a water chiller, and pump, a high efficiency moisture eliminator; an electric heater, two parallel sets of HEPA filters, each with a high efficiency gas absorber. Down time for any of these components must be negotiated with the department.

- 11) Any problems, which could affect the monitoring, ventilation or controls to this facility must be reported to the department.
- 12) Continuous monitoring must be in place prior to operating. This will include continuous ambient air sampling for this project.
- 13) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 14) The department must approve any deviation from required or recommended monitoring standards.
- 15) The department reserves the right to conduct an environmental surveillance program around this emission unit and to require the facility to conduct or modify its own environmental monitoring program (WAC 246-247-075(9)).
- 16) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 17) The NOC constitutes a contract between the department and the facility. The department must approve any changes.
- 18) Nothing may be inferred that is not specifically described in the NOC.
- 19) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 20) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 21) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 22) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 23) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 24) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 25) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).

- 26) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 27) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6)).

- 28) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 29) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 30) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 31) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. (WAC 246-247-080(2)).

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR
PROJECT TITLE: CENTRAL WASTE COMPLEX (CWC) OPERATIONS

Date Approved: 29-Jul-02
Emission Unit Name: CENTRAL WASTE COMPLEX

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: None

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
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Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Appendix B, Method 114(3)	All radionuclides which could contribute 10% of the potential EDE.	Near field ambient monitoring program

Sampling Requirements: Environment Sampling; Ambient air monitors N-449, N-457, N-964, and N-433

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

10/24/1995 Original NOC, Radioactive Air Emissions Program Notice of Construction for the Central Waste Complex and Enhanced Radioactive and Mixed Waste Storage, Phase V. Project W-112 (DOE/RL-95-79), approved on October 24, 1995 via AIR 95-1008.

10/25/1995 Condition on annual abated emission limit clarified via AIR 95-1009, dated October 25, 1995.

08/24/1998 Modified NOC, Modification to Central Waste Complex Radioactive Air Emissions Notice of Construction, replaced original NOC, approved August 24, 1998 via Shortform Approval.

10/29/1999 DOH completed a review of Request for Approval Vented Container Annual Release Fraction (DOE/RL-99-60, Rev 0) and denied the future use of 2.5E-14 release fraction via AIR 99-1006.

01/04/2000 NOC Revision Form approved on January 4, 2000 removed the requirement to perform weekly smear sampling of the NUCFIL filters based on the 2 E-9 release fraction.

02/28/2002 Combined NOC ID 292 with NOC ID 295.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $2.40\text{E-}05$ mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to $4.80\text{E-}02$ mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 3) **This process is limited to:**
the process of managing four primary types of waste: low-level (LLW), low-level mixed (LLMW), transuranic (TRU), and TRU-mixed waste. The LLW typically contains rags, paper, rubber gloves, disposal supplies, tools, industrial waste (e.g., failed equipment), solidified process byproducts, and laboratory wastes that are contaminated with radioactive material. This waste is considered LLW if it contains radioactive material and is not classified as TRU waste, high-level waste, or spent nuclear fuel.

Generally, LLW and LLMW accepted for storage at the CWC must meet the criteria for low specific activity through Type A2 quantities. Containers in excess of A2 quantities may also be accepted with a specific approved safety analysis. Although transuranic radionuclides may also be present in concentrations up to 100 nCi/g, this waste form is significantly less hazardous than TRU because the material is limited to Type A2 quantities. (Note: Contact handled TRU container limits are more than 1,000 times greater than Type A2 quantities.)

TRU and TRU-mixed waste typically contains rags, paper, rubber gloves, disposable supplies, tools, industrial waste (e.g., failed equipment), solidified process byproducts, and laboratory wastes that are contaminated with TRU material. This waste must contain at least 100 nCi of TRU material per gram of waste or it is considered LLW. The TRU waste accepted by CWC may contain varying concentrations of TRU radionuclides and limited amounts of non-TRU radionuclides. With some exceptions allowed based on safety analysis, the TRU content of waste containers is generally limited to 53 239/240 Pu dose equivalent curies (DE-Ci), where the DE-Ci is derived by multiplying the isotopic composition (i.e., weight fractions of the various TRU isotopes) by the specific activities of each isotope, and then converting that number with corrections factors taken from the Hanford Site Solid Waste Acceptance Criteria. The DE-Ci unit is designed to control inhalation dose impacts independent of radionuclide type. The radionuclides Pu-39 and Pu-240 are considered equivalent and are combined for calculation purposes.

The annual possession quantity (APQ) shall be tracked by the DE curies and is represented by Pu-239 for this purpose.

The CWC stores low-level (LLW), low-level mixed (LLMW), transuranic (TRU), and TRU-mixed waste.

The CWC is designed for the receipt and storage of contact-handled waste packages, which are defined

as packages having surface dose rate of less than 2 mSv/h (200 mrem/h). Although packages up to 200 mrem/h can be stored at CWC, an operation limit of 1 mSv/h (100 mrem/h) has been established. Each waste package is characterized before receipt and based on this information; incompatible forms of waste are physically segregated.

CWC personnel receive and inspect waste packages at the Waste Receiving and Staging Area. Transport off-load operations are performed by hand truck, forklift, or crane by qualified personnel. Packages are transported, generally by forklift to the mixed waste storage pad and then to the assigned facility. Alternatively, waste packages may be received, inspected, and unloaded at the specific facility where waste will be stored.

Waste containers are not opened during normal operations at the CWC buildings. Under normal operating conditions there is no airborne release of radioactive material expected from opening waste containers.

Inventories of TRU content, non-TRU radionuclides, and hazardous waste constituents are controlled at all waste storage facilities at the CWC. The inventory control system ensures that each building, building quadrant, or module will comply with its established inventory limit.

TRU waste containers are generally equipped with a pressure relief vent device, such as the NucFil filter. This filter allows the release of any gases that may be produced as a result of radiolysis inside the container, while preventing release of any particulate matter.

Waste shipments are transported to the Waste Receiving and Staging Area where the waste containers are radiologically surveyed and the exterior visually inspected for physical integrity. Waste records are checked for completeness and accuracy in accordance with procedures that provide instructions for performing detailed entry-by-entry reviews of waste records. To the extent practicable, this work is performed before unloading. However, partial unloading of a shipment may be necessary to complete a thorough survey and inspection. Verification of container contents, which may involve the opening of containers and sampling of waste contents, is performed at a facility separate from the CWC (e.g., T-Plant).

Waste packages meeting all acceptance criteria are accepted for storage. Non-compliant waste packages (e.g., with paperwork errors or omissions and damaged containers) are held until the non-compliant condition is corrected to the satisfaction of the responsible Solid Waste Manager or designee.

To detect leaking or deteriorating containers, or deterioration of the containment system, all waste containers are inspected on a weekly basis. To ensure access for inspection, aisles are provided and rows may be no more than two drums wide. Nominal aisle width between container rows is 76.2 cm (30 in.) for all locations except the storage modules where 61 cm (24 in.) is the minimum.

PermaCon unit:

This approval also allows the placement of a modular containment PermaCon unit within the 2404WC Building (or similar CWC building) for the purpose of sampling the head space gas within solid waste storage containers.

4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Alpha 0	2.50E+04
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- 5) **This condition was obsoleted on 4/8/2002.** The process is limited to the exact description described in this NOC.
Replaced by new process description.
- 6) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 7) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 8) Container inventory shall be tracked (logged) using the SWITS database.
- 9) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 10) **This condition was obsoleted on 9/29/1998.** DOE shall arrange a meeting in September 1998 to negotiate the method to evaluate the calculated release fraction for the NucFil filters. A new release fraction (developed as negotiated with the department) shall be provided to the department by September 1999.
A meeting was held on 9/28/98 for discussion and approval of the method for evaluating the release fraction.
- 11) Periodic confirmatory sampling is required. It must consist of: sampling quarterly using a portable sampler for a two-week interval inside the CWC building (excluding outdoor pads) containing vented containers with the highest cumulative inventory of DE curies during the quarter sampled. (Samples will be handled following the applicable sections of 40 CFR 61, Appendix B, Method 114.)
- 12) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 13) **This condition was obsoleted on 1/4/2000.** If a positive smear is detected ($>20\text{dpm}/100\text{cm}^2$ alpha and $>10,000\text{dpm}/100\text{cm}^2$ for beta/gamma) while performing the routine survey as in Attachment A, the department shall be notified.
Obsoleted via NOC Revision Form, approved January 4, 2000.
- 14) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 15) The facility must maintain a log in an approved format (SWITS database) for this activity or emission unit.
- 16) **This condition was obsoleted on 4/20/2002.** U.S. DOE shall monitor this project or emission unit as follows: See other conditions
This was not a condition of operation.
- 17) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).

- 18) The radionuclides are limited to: H-3, C-14, K-40, Ar-41, Cr-51, Mn-54, Fe-59, Co-58, Co-60, Zn-65, Kr-85, Sr-89, Sr-90, Y-90, Zr-95, Nb-95, Tc-99, Ru-103, Ru-106, Sn-113, Sb-124, Sb-125, I-129, I-131, Cs-134, Cs-137, Ba-137, Ce-141, Ce-144, Pm-147, Eu-152, Eu-154, Eu-155, Tl-208, Po-210, Po-212, Po-216, Bi-212, Bi-214, Pb-212, Pb-214, Rn-220, Ra-224, Ra-226, Ac-228, Th-232, Th-228, Th-234, U-232, U-233, U-234, U-235, U-236, U-238, Np-237, Pu-238, Pu-239, Pu-240, Pu-241, Pu-242, Am-241, Am-243, Cm-242, Cm-243, Cm-244, and Cf-252

The above list of radionuclides represents all of the significant radionuclides historically present at the Central Waste Complex (CWC), including some that are not significant. Any radionuclide on the chart of the nuclides could be present or received at CWC in the future. Periodic confirmatory measurements to verify low emissions are performed by taking a two-week air sample on a quarterly basis and analyzing for total alpha and total beta. Although any radionuclide could be present, for conservatism all beta is assumed to be Cs-137 and all alpha is assumed to be Am-241 for dose calculation estimates.

- 19) Ambient air monitors N-449, N-457, N-964, N-433 shall be maintained for the duration of this project as monitors for diffuse fugitive emission.

- 20) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).

- 21) **This condition was obsoleted on 8/24/1998.** If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).

- 22) **This condition was obsoleted on 4/8/2002.** This approval, with its conditions and limitations, constitutes an amendment to the Department's Radioactive Air Emissions License. This amendment must be included in the next revision of the Hanford Air Operation Permit.

Obsoleted by issuance of the Hanford Site Air Operating Permit.

- 23) **This condition was obsoleted on 4/8/2002.** The abated emission limit is $2.4E-5$ mrem/yr to the MEL.

Replaced by standard condition.

- 24) **This condition was obsoleted on 8/24/1998.** The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).

02/26/02 Updated with new standard Condition/Limitation.

- 25) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).

- 26) The required controls are:

Emissions control for vented containers within the CWC will consist of NucFil {tm} filters. (Under normal operating conditions, non-vented containers are not expected to produce radioactive emissions.)

A NucFil {tm} filter consists of a porous carbon/carbon composite of non-activated carbon fibers housed in stainless steel that as a minimum, restricts the release of 99.95% of particles with a mean 0.3

microns in size.

In addition, housekeeping (e.g., decontamination and replacing leaking containers as needed) and frequent smears throughout the CWC will be used to ensure that the emission control equipment is working properly. Smears that exceed 20 dpm/100 sqcm for alpha and 1,000 dpm/100 sqcm for beta/gamma contamination will be investigated to determine the cause of the contamination and appropriate corrective actions will be implemented.

- 27) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

- 28) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 29) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 30) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR
PROJECT TITLE: CENTRAL WASTE COMPLEX (CWC) OPERATIONS

Date Approved: 29-Jul-02
Emission Unit Name: PERMACON UNIT

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: None

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
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Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Appendix B, Method 114(3)		Quarterly frequency revisited after a year for changes to annual.
Sampling Requirements: Quarterly for 2 weeks of operations			

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 10/24/1995 Original NOC, Radioactive Air Emissions Program Notice of Construction for the Central Waste Complex and Enhanced Radioactive and Mixed Waste Storage, Phase V, Project W-112 (DOE/RL-95-79), approved on October 24, 1995 via AIR 95-1008.
- 10/25/1995 Condition on annual abated emission limit clarified via AIR 95-1009, dated October 25, 1995.
- 08/24/1998 Modified NOC, Modification to Central Waste Complex Radioactive Air Emissions Notice of Construction, replaced original NOC, approved August 24, 1998 via Shortform Approval.
- 10/29/1999 DOH completed a review of Request for Approval Vented Container Annual Release Fraction (DOE/RL-99-60, Rev 0) and denied the future use of 2.5E-14 release fraction via AIR 99-1006.
- 01/04/2000 NOC Revision Form approved on January 4, 2000 removed the requirement to perform weekly smear sampling of the NUCFIL filters based on the 2 E-9 release fraction.
- 02/28/2002 Combined NOC ID 292 with NOC ID 295.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $2.40\text{E-}05$ mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to $4.80\text{E-}02$ mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 3) **This process is limited to:**
the process of managing four primary types of waste: low-level (LLW), low-level mixed (LLMW), transuranic (TRU), and TRU-mixed waste. The LLW typically contains rags, paper, rubber gloves, disposal supplies, tools, industrial waste (e.g., failed equipment), solidified process byproducts, and laboratory wastes that are contaminated with radioactive material. This waste is considered LLW if it contains radioactive material and is not classified as TRU waste, high-level waste, or spent nuclear fuel.

Generally, LLW and LLMW accepted for storage at the CWC must meet the criteria for low specific activity through Type A2 quantities. Containers in excess of A2 quantities may also be accepted with a specific approved safety analysis. Although transuranic radionuclides may also be present in concentrations up to 100 nCi/g, this waste form is significantly less hazardous than TRU because the material is limited to Type A2 quantities. (Note: Contact handled TRU container limits are more than 1,000 times greater than Type A2 quantities.)

TRU and TRU-mixed waste typically contains rags, paper, rubber gloves, disposable supplies, tools, industrial waste (e.g., failed equipment), solidified process byproducts, and laboratory wastes that are contaminated with TRU material. This waste must contain at least 100 nCi of TRU material per gram of waste or it is considered LLW. The TRU waste accepted by CWC may contain varying concentrations of TRU radionuclides and limited amounts of non-TRU radionuclides. With some exceptions allowed based on safety analysis, the TRU content of waste containers is generally limited to 53 239/240 Pu dose equivalent curies (DE-Ci), where the DE-Ci is derived by multiplying the isotopic composition (i.e., weight fractions of the various TRU isotopes) by the specific activities of each isotope, and then converting that number with corrections factors taken from the Hanford Site Solid Waste Acceptance Criteria. The DE-Ci unit is designed to control inhalation dose impacts independent of radionuclide type. The radionuclides Pu-239 and Pu-240 are considered equivalent and are combined for calculation purposes.

The annual possession quantity (APQ) shall be tracked by the DE curies and is represented by Pu-239 for this purpose.

The CWC stores low-level (LLW), low-level mixed (LLMW), transuranic (TRU), and TRU-mixed waste.

The CWC is designed for the receipt and storage of contact-handled waste packages, which are defined

as packages having surface dose rate of less than 2 mSv/h (200 mrem/h). Although packages up to 200 mrem/h can be stored at CWC, an operation limit of 1 mSv/h (100 mrem/h) has been established. Each waste package is characterized before receipt and based on this information; incompatible forms of waste are physically segregated.

CWC personnel receive and inspect waste packages at the Waste Receiving and Staging Area. Transport off-load operations are performed by hand truck, forklift, or crane by qualified personnel. Packages are transported, generally by forklift to the mixed waste storage pad and then to the assigned facility. Alternatively, waste packages may be received, inspected, and unloaded at the specific facility where waste will be stored.

Waste containers are not opened during normal operations at the CWC buildings. Under normal operating conditions there is no airborne release of radioactive material expected from opening waste containers.

Inventories of TRU content, non-TRU radionuclides, and hazardous waste constituents are controlled at all waste storage facilities at the CWC. The inventory control system ensures that each building, building quadrant, or module will comply with its established inventory limit.

TRU waste containers are generally equipped with a pressure relief vent device, such as the NucFil filter. This filter allows the release of any gases that may be produced as a result of radiolysis inside the container, while preventing release of any particulate matter.

Waste shipments are transported to the Waste Receiving and Staging Area where the waste containers are radiologically surveyed and the exterior visually inspected for physical integrity. Waste records are checked for completeness and accuracy in accordance with procedures that provide instructions for performing detailed entry-by-entry reviews of waste records. To the extent practicable, this work is performed before unloading. However, partial unloading of a shipment may be necessary to complete a thorough survey and inspection. Verification of container contents, which may involve the opening of containers and sampling of waste contents, is performed at a facility separate from the CWC (e.g., T-Plant).

Waste packages meeting all acceptance criteria are accepted for storage. Non-compliant waste packages (e.g., with paperwork errors or omissions and damaged containers) are held until the non-compliant condition is corrected to the satisfaction of the responsible Solid Waste Manager or designee.

To detect leaking or deteriorating containers, or deterioration of the containment system, all waste containers are inspected on a weekly basis. To ensure access for inspection, aisles are provided and rows may be no more than two drums wide. Nominal aisle width between container rows is 76.2 cm (30 in.) for all locations except the storage modules where 61 cm (24 in.) is the minimum.

PermaCon unit:

This approval also allows the placement of a modular containment PermaCon unit within the 2404WC Building (or similar CWC building) for the purpose of sampling the head space gas within solid waste storage containers.

4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Pu	239	4.69E+06
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- 5) Emissions from the PermaCon shall be vented through a 2,000 cfm or less testable HEPA filter exhauster.
- 6) A fixed head sampler, located inside the PermaCon near the exhaust stack, shall be used at least quarterly (for the period of operation or two weeks which ever is lower) to obtain samples of the airspace within the PermaCon unit during operation for each quarter that the PermaCon is operated.
- 7) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 8) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
- 9) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 10) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 11) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 12) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 13) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 14) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 15) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 16) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 17) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 18) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 19) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6)).

- 20) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 21) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 22) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

**DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR**

**PROJECT TITLE: INSTALLATION AND OPERATION OF WASTE RETRIEVAL SYSTEMS IN
TANKS 241-AZ-101 AND 241-AZ-102**

**Date Approved: 09-May-02
Emission Unit Name: 296-A-42**

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	Condenser	1	
	HEME	1	
	Heater	1	2 parallel flow paths with 1 operational
	HEPA	2	Before and After the HEGA (gas absorber) 2 parallel flow paths
	HEGA	1	2 parallel flow paths
	Fan	1	2 parallel flow paths

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Regulatory Requirements	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4) & WAC 246-247-75(2)	Method 2 appendix A Method 114 appendix B 61.93(b)(2)(ii) ANSI N13.1	All radionuclides that contribute greater than 10 percent of the potential-to-emit TEDE to the MEI, greater than 0.1 mrem/yr potential-to-emit TEDE to the MEI, and greater than 25 percent of the TEDE to the MEI after controls	Continuous

Sampling Requirements: Continuous

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

07/27/2001 NOC (DOE/GRP-2001-01) received July 27, 2001. NOC was revised prior to approval.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $1.31\text{E-}01$ mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to $6.90\text{E-}01$ mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
the modification of tank 241-AZ-101 and -102 and associated equipment to allow for installation and operation of waste retrieval system equipment. The operation of the waste retrieval system shall continue to operate in batch mode until 2028. This modification is limited to the following major components.

New In-Tank Equipment:

Installation of mixer pumps in 241-AZ-102 tank for mobilization of settled solids. The pumps will be capable of pumping waste through each of two, horizontally opposed, discharge nozzles. Mixer pumps have already been installed in tank 241-AZ-101.

Installation of a riser extension/spray wash system on top of each of the risers used for mixer pumps. The spray wash system shall be used for future decontamination of the mixer pumps if the pumps are removed from the tank.

Installation of Thermocouple trees.

Installation of one transfer pump in each tank for the transfer of waste.

New Ancillary Equipment and Buildings:

Installation of electrical power and instrument cables and other utility tie-ins and/or upgrades (e.g., sanitary and raw water, and telecommunications).

Tie-ins to the existing dilution and caustic supply system to provide for diluent addition to bring waste properties into compliance with the feed specifications and to flush and preheat transfer lines.

Installation of new pit cover blocks for the 241-AZ-01A and 241-AZ-02A central pump pits.

Installation of new water and diluent piping to and from the process pits and mixer pumps.

Installation of new process jumpers inside existing central pump pits.

Installation of concrete pads for electrical and mechanical equipment.

Installation of chain-link fencing and gates.

Removal, Repair, Decontamination, and Demolition of Existing Equipment:

Removal of transfer pumps, as needed during the life of the activity.

Removal/repair of mixer pumps, as needed during the life of the activity.

Removal of existing thermocouple trees.

Construction activities shall be limited to the following:

Soil shall be excavated inside and outside of the 241-AZ Tank Farm to tie-in to the existing AN Tank Farm caustic supply system and to remove soil in preparation for mixer pump foundations and equipment support structures. Excavation of soil shall be limited to 6,000 cubic yards. Backfill shall be made with original removed soil or non-contaminated controlled density fill.

Soil excavation activities both inside and, if contamination is present, outside the tank farm fence shall be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools) (Appendix A of HNF-4327). Clean soil piles within the Tank Farm fence can be moved from one place to another within the tank farm with heavy equipment (backhoe, front-loader). Excavation of non-contaminated soil outside of the Tank Farm fence can also be performed with heavy equipment. If the regulated guzzler is used to excavate soil it shall be used as described in the NOC for guzzler use in the 241-A Tank Farm Complex and comply with all Conditions and Limitations of Shortform Approval Form, dated 12/31/1997.

Required cuts of contaminated piping shall be made inside a glove bag using a sawzall or tri-tool, or equivalent. To perform pipe cuts of contaminated piping without a glove bag the piping shall be surveyed/smear to verify removable contamination levels are equal to or less than 10,000 dpm/100 square centimeters beta/gamma and 200 dpm/100 square centimeters alpha.

When welding on contaminated piping contamination levels will be reduced to 1000 dpm/100 square centimeters beta/gamma and 200 dpm/100 square centimeters alpha.

Work to be performed in pump pits shall be limited to the replacing of existing sets of cover blocks with newly designed cover blocks, core drilling (equivalent of 100 14-inch diameter holes), installing new nozzles, and removing and replacing existing jumpers.

Pit access and work shall be performed in accordance with ALARACT Demonstration 6, TWRS ALARACT Demonstration for Pit Access, and ALARACT Demonstration 14, TWRS ALARACT Demonstration for Pit Work.

At the start of pit work, the cover blocks will be lifted off and radiologically surveyed to determine an appropriate disposal method. As a minimum the disposal of the cover block shall meet the requirements of ALARACT Demonstration 4 TWRS ALARACT Demonstration for Packaging and Transportation of Waste.

Core drilling shall occur below grade level and on the outside of the pit. The hole shall be drilled from the outside to the inside. A temporary pit cover shall be in place prior to penetration of the inner pit wall. If immediate nozzle installation is not possible, the hole shall be sealed temporarily with a plug or

tape. Installation of new nozzles in existing pits shall be assembled ahead of time and lowered into the position as a single unit. The piping shall be threaded through the hole from the inside to the outside and pulled tight into place from the outside of the pit. The nozzle shall be fitted with a temporary cap/seal until a jumper is connected, and the temporary pit cover shall be replaced.

Existing flexible receiver equipment shall be used to remove and decontaminate long-length components to acceptable levels. Equipment removal shall be performed in accordance with ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment.

If a HEPA filter vacuum radioactive air emission unit is chosen to be used, it shall comply with all requirements of the latest revision of NOC DOE/RL-97-50.

If a portable/temporary radioactive air emission unit is chosen to be used it shall comply with all requirements of the latest revision of NOC DOE/RL-96-75.

Waste samples shall be collected in accordance with TWRS ALARACT Demonstration 7, TWRS ALARACT Demonstration for Tank Waste Grab Sampling, to verify adequate mixing of the waste has been achieved

4) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**

Ac	227	1.09E-03
Am	241	2.69E+04
Am	243	5.22E+00
Ba	137 m	5.68E+06
C-	14	6.70E+00
Cd	113 m	1.50E+03
Cm	242	2.56E+01
Cm	243	3.58E+00
Cm	244	7.68E+01
Co	60	1.12E+03
Cs	134	4.90E+03
Cs	137	6.01E+06
Eu	152	8.69E+02
Eu	154	1.32E+04
Eu	155	1.71E+04
H-	3	1.25E+02
I-	129	1.84E+00
Nb	93 m	8.33E+01
Ni	59	2.01E+01
Ni	63	2.20E+03
Np	237	1.30E+01
Pa	231	4.33E+01
Pu	238	1.11E+02
Pu	239	1.39E+03
Pu	240	3.19E+02
Pu	241	8.53E+03

Pu	242	4.47E+02
Ra	226	1.88E-04
Ra	228	2.95E-03
Ru	106	1.00E+03
Sb	125	9.98E+03
Se	79	4.96E+00
Sm	151	1.33E+05
Sn	113	6.37E+01
Sn	126	6.37E+01
Sr	90	4.77E+06
Tc	99	1.25E+03
Th	229	1.95E+02
Th	232	2.71E-02
U-	232	1.28E-02
U-	233	2.28E+00
U-	234	2.96E+03
U-	235	6.02E-02
U-	236	1.68E-01
U-	238	1.10E+00
Y-	90	4.77E-06
Zr	93	2.60E+02

- 5) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 6) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 7) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 8) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 9) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 10) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 11) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6)).

- 12) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 13) The individual HEPA filters shall be annually tested in place (per ASME N510), with a minimum efficiency of 99.95 percent.
- 14) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
- 15) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 16) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 17) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 18) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. (WAC 246-247-080(2)).
- 19) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitations in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 20) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 21) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: INSTALLATION AND OPERATION OF WASTE RETRIEVAL SYSTEMS IN
TANKS 241-AZ-101 AND 241-AZ-102**

**Date Approved: 09-May-02
Emission Unit Name: GUZZLER**

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **ALARACT**

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
	Collection Tank and Plate Separator	1	
	Cyclone Separator	1	Baghouse with 72 bags each.
	Micro-strainer Device	1	
	HEPA	3	Three in-place tested HEPA filters in parallel.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Regulatory Requirements</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
WAC 246-247-075[3]	Appendix D, Method 114(3)	All radionuclides which could contribute greater than 10% of the potential-to-emit TEDE to the MEI, greater than 0.1 mrem/yr potential-to-emit TEDE to the MEI, and greater than 25% of the TEDE to the MEI, after controls.	When the HEPA filters are replaced and annually screening the HEPA filtration system.

Sampling Requirements: Radiation surveys and to include but not limited to NDA testing of the HEPA filters and screening the HEPA filtration system using gamma spectroscopy.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

07/27/2001 NOC (DOE/ORP-2001-01) received July 27, 2001. NOC was revised prior to approval.

12/03/2001 NOC Revision (DOE/OR-2001-01, Revision 1) received December 03, 2001. Approved via AIR 02-503 on May 9, 2002.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 1.31E-01 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 6.90E-01 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**
the modification of tank 241-AZ-101 and -102 and associated equipment to allow for installation and operation of waste retrieval system equipment. The operation of the waste retrieval system shall continue to operate in batch mode until 2028. This modification is limited to the following major components.

New In-Tank Equipment:

Installation of mixer pumps in 241-AZ-102 tank for mobilization of settled solids. The pumps will be capable of pumping waste through each of two, horizontally opposed, discharge nozzles. Mixer pumps have already been installed in tank 241-AZ-101.

Installation of a riser extension/spray wash system on top of each of the risers used for mixer pumps. The spray wash system shall be used for future decontamination of the mixer pumps if the pumps are removed from the tank.

Installation of Thermocouple trees.

Installation of one transfer pump in each tank for the transfer of waste.

New Ancillary Equipment and Buildings:

Installation of electrical power and instrument cables and other utility tie-ins and/or upgrades (e.g., sanitary and raw water, and telecommunications).

Tie-ins to the existing dilution and caustic supply system to provide for diluent addition to bring waste properties into compliance with the feed specifications and to flush and preheat transfer lines.

Installation of new pit cover blocks for the 241-AZ-01A and 241-AZ-02A central pump pits.

Installation of new water and diluent piping to and from the process pits and mixer pumps.

Installation of new process jumpers inside existing central pump pits.

Installation of concrete pads for electrical and mechanical equipment.

Installation of chain-link fencing and gates.

Removal, Repair, Decontamination, and Demolition of Existing Equipment:

Removal of transfer pumps, as needed during the life of the activity.

Removal/repair of mixer pumps, as needed during the life of the activity.

Removal of existing thermocouple trees.

Construction activities shall be limited to the following:

Soil shall be excavated inside and outside of the 241-AZ Tank Farm to tie-in to the existing AN Tank Farm caustic supply system and to remove soil in preparation for mixer pump foundations and equipment support structures. Excavation of soil shall be limited to 6,000 cubic yards. Backfill shall be made with original removed soil or non-contaminated controlled density fill.

Soil excavation activities both inside and, if contamination is present, outside the tank farm fence shall be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools) (Appendix A of HNF-4327). Clean soil piles within the Tank Farm fence can be moved from one place to another within the tank farm with heavy equipment (backhoe, front-loader). Excavation of non-contaminated soil outside of the Tank Farm fence can also be performed with heavy equipment. If the regulated guzzler is used to excavate soil it shall be used as described in the NOC for guzzler use in the 241-A Tank Farm Complex and comply with all Conditions and Limitations of Shortform Approval Form, dated 12/31/1997.

Required cuts of contaminated piping shall be made inside a glove bag using a sawzall or tri-tool, or equivalent. To perform pipe cuts of contaminated piping without a glove bag the piping shall be surveyed/smeared to verify removable contamination levels are equal to or less than 10,000 dpm/100 square centimeters beta/gamma and 200 dpm/100 square centimeters alpha.

When welding on contaminated piping contamination levels will be reduced to 1000 dpm/100 square centimeters beta/gamma and 200 dpm/100 square centimeters alpha.

Work to be performed in pump pits shall be limited to the replacing of existing sets of cover blocks with newly designed cover blocks, core drilling (equivalent of 100 14-inch diameter holes), installing new nozzles, and removing and replacing existing jumpers.

Pit access and work shall be performed in accordance with ALARACT Demonstration 6, TWRS ALARACT Demonstration for Pit Access, and ALARACT Demonstration 14, TWRS ALARACT Demonstration for Pit Work.

At the start of pit work, the cover blocks will be lifted off and radiologically surveyed to determine an appropriate disposal method. As a minimum the disposal of the cover block shall meet the requirements of ALARACT Demonstration 4 TWRS ALARACT Demonstration for Packaging and Transportation of Waste.

Core drilling shall occur below grade level and on the outside of the pit. The hole shall be drilled from the outside to the inside. A temporary pit cover shall be in place prior to penetration of the inner pit wall. If immediate nozzle installation is not possible, the hole shall be sealed temporarily with a plug or tape. Installation of new nozzles in existing pits shall be assembled ahead of time and lowered into the position as a single unit. The piping shall be threaded through the hole from the inside to the outside and pulled tight into place from the outside of the pit. The nozzle shall be fitted with a temporary cap/seal

until a jumper is connected, and the temporary pit cover shall be replaced.

Existing flexible receiver equipment shall be used to remove and decontaminate long-length components to acceptable levels. Equipment removal shall be performed in accordance with ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment.

If a HEPA filter vacuum radioactive air emission unit is chosen to be used, it shall comply with all requirements of the latest revision of NOC DOE/RL-97-50.

If a portable/temporary radioactive air emission unit is chosen to be used it shall comply with all requirements of the latest revision of NOC DOE/RL-96-75.

Waste samples shall be collected in accordance with TWRS ALARACT Demonstration 7, TWRS ALARACT Demonstration for Tank Waste Grab Sampling, to verify adequate mixing of the waste has been achieved

4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Alpha0	4.42E-03
B/G 0	1.10E-01

- 5) Use of the Guzzler shall comply with all Conditions and Limitations identified in Shortform Approval Form, dated 12/23/1997, or latest revision, for Guzzler Use in the 241-A Tank Farm Complex.
- 6) The total volume of soil excavated with the use of the Guzzler shall be limited to either 700 cubic feet, or the radionuclide content of the soil excavated shall not exceed the total Annual Possession Quantity, and shall be tracked on a WDOH approved log.
- 7) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 8) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 9) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 10) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 11) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 12) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 13) The maximum radiological soil measurements shall not exceed 10 cpm alpha, and 10,000 cpm beta. Results of radiological surveys shall be documented in a WDOH approved log.
- 14) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitations in the license. Applicable standards WAC 246-247-040 include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or

any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).

- 15) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6)).

- 16) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 17) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 18) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 19) Diffuse/Fugitive emissions shall be monitored using the near-field ambient air monitors as well as the Hanford Site perimeter air sampling locations. Sample collection and analysis shall follow that of the near field monitoring program and the Hanford Site perimeter air sampling program. All radionuclides that contribute greater than 10% of the potential-to-emit TEDE to the MEI, greater than 0.1 mrem/yr potential-to-emit TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls shall be measured. Results of potential releases and corresponding doses to the public from diffuse and fugitive emissions shall be reported in the Annual Air Emissions Report to confirm the site is below the standards identified in (WAC 246-247-040(1)). Any change to the near-field ambient air monitoring program or the Hanford Site perimeter air sampling program must be approved by the department.
- 20) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
- 21) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).

- 22) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 23) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 24) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. (WAC 246-247-080(2)).

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: INSTALLATION AND OPERATION OF WASTE RETRIEVAL SYSTEMS IN
TANKS 241-AZ-101 AND 241-AZ-102**

Date Approved: 09-May-02

Emission Unit Name: 200 AREA DIFFUSE/FUGITIVE

This is a MAJOR, FUGITIVE, non-point source emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: **BARCT**

ALARACT [WAC 246-247-040(4)]

BARCT [WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
			Abatement controls as required in the following Conditions and Limitations.

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Regulatory Requirements</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
WAC 246-247-075(3)	Appendix B, Method 114	All radionuclides which could contribute 10% of the potential EDE.	As listed in the following Conditions and Limitations.

Sampling Requirements: Existing near-facility monitoring stations.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section

Change History

07/27/2001 NOC (DOE/ORP-2001-01) received July 27, 2001. NOC was revised prior to approval.

12/03/2001 NOC Revision (DOE/OR-2001-01, Revision 1) received December 03, 2001. Approved via AIR 02-503 on May 9, 2002.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 1.31E-01 mrem/year to the Maximally Exposed Individual. The total unabated emission limit for this Notice of Construction is limited to 6.90E-01 mrem/year to the Maximally Exposed Individual.
- 3) **This process is limited to:**

the modification of tank 241-AZ-101 and -102 and associated equipment to allow for installation and operation of waste retrieval system equipment. The operation of the waste retrieval system shall continue to operate in batch mode until 2028. This modification is limited to the following major components.

New In-Tank Equipment:

Installation of mixer pumps in 241-AZ-102 tank for mobilization of settled solids. The pumps will be capable of pumping waste through each of two, horizontally opposed, discharge nozzles. Mixer pumps have already been installed in tank 241-AZ-101.

Installation of a riser extension/spray wash system on top of each of the risers used for mixer pumps. The spray wash system shall be used for future decontamination of the mixer pumps if the pumps are removed from the tank.

Installation of Thermocouple trees.

Installation of one transfer pump in each tank for the transfer of waste.

New Ancillary Equipment and Buildings:

Installation of electrical power and instrument cables and other utility tie-ins and/or upgrades (e.g., sanitary and raw water, and telecommunications).

Tie-ins to the existing dilution and caustic supply system to provide for diluent addition to bring waste properties into compliance with the feed specifications and to flush and preheat transfer lines.

Installation of new pit cover blocks for the 241-AZ-01A and 241-AZ-02A central pump pits.

Installation of new water and diluent piping to and from the process pits and mixer pumps.

Installation of new process jumpers inside existing central pump pits.

Installation of concrete pads for electrical and mechanical equipment.

Installation of chain-link fencing and gates.

Removal, Repair, Decontamination, and Demolition of Existing Equipment:

Removal of transfer pumps, as needed during the life of the activity.

Removal/repair of mixer pumps, as needed during the life of the activity.

Removal of existing thermocouple trees.

Construction activities shall be limited to the following:

Soil shall be excavated inside and outside of the 241-AZ Tank Farm to tie-in to the existing AN Tank Farm caustic supply system and to remove soil in preparation for mixer pump foundations and

equipment support structures. Excavation of soil shall be limited to 6,000 cubic yards. Backfill shall be made with original removed soil or non-contaminated controlled density fill.

Soil excavation activities both inside and, if contamination is present, outside the tank farm fence shall be performed in accordance with ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools) (Appendix A of HNF-4327). Clean soil piles within the Tank Farm fence can be moved from one place to another within the tank farm with heavy equipment (backhoe, front-loader). Excavation of non-contaminated soil outside of the Tank Farm fence can also be performed with heavy equipment. If the regulated guzzler is used to excavate soil it shall be used as described in the NOC for guzzler use in the 241-A Tank Farm Complex and comply with all Conditions and Limitations of Shortform Approval Form, dated 12/31/1997.

Required cuts of contaminated piping shall be made inside a glove bag using a sawzall or tri-tool, or equivalent. To perform pipe cuts of contaminated piping without a glove bag the piping shall be surveyed/smear to verify removable contamination levels are equal to or less than 10,000 dpm/100 square centimeters beta/gamma and 200 dpm/100 square centimeters alpha.

When welding on contaminated piping contamination levels will be reduced to 1000 dpm/100 square centimeters beta/gamma and 200 dpm/100 square centimeters alpha.

Work to be performed in pump pits shall be limited to the replacing of existing sets of cover blocks with newly designed cover blocks, core drilling (equivalent of 100 14-inch diameter holes), installing new nozzles, and removing and replacing existing jumpers.

Pit access and work shall be performed in accordance with ALARACT Demonstration 6, TWRS ALARACT Demonstration for Pit Access, and ALARACT Demonstration 14, TWRS ALARACT Demonstration for Pit Work.

At the start of pit work, the cover blocks will be lifted off and radiologically surveyed to determine an appropriate disposal method. As a minimum the disposal of the cover block shall meet the requirements of ALARACT Demonstration 4 TWRS ALARACT Demonstration for Packaging and Transportation of Waste.

Core drilling shall occur below grade level and on the outside of the pit. The hole shall be drilled from the outside to the inside. A temporary pit cover shall be in place prior to penetration of the inner pit wall. If immediate nozzle installation is not possible, the hole shall be sealed temporarily with a plug or tape. Installation of new nozzles in existing pits shall be assembled ahead of time and lowered into the position as a single unit. The piping shall be threaded though the hole from the inside to the outside and pulled tight into place from the outside of the pit. The nozzle shall be fitted with a temporary cap/seal until a jumper is connected, and the temporary pit cover shall be replaced.

Existing flexible receiver equipment shall be used to remove and decontaminate long-length components to acceptable levels. Equipment removal shall be performed in accordance with ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment.

If a HEPA filter vacuum radioactive air emission unit is chosen to be used, it shall comply with all requirements of the latest revision of NOC DOE/RL-97-50.

If a portable/temporary radioactive air emission unit is chosen to be used it shall comply with all requirements of the latest revision of NOC DOE/RL-96-75.

Waste samples shall be collected in accordance with TWRS ALARACT Demonstration 7, TWRS ALARACT Demonstration for Tank Waste Grab Sampling, to verify adequate mixing of the waste has been achieved

4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Ac	227	5.90E-08
Am	241	2.51E+00
Am	243	2.83E-04
Ba	137 m	3.08E+02
C-	14	3.63E-04
Cd	113 m	8.12E-02
Cm	242	1.39E-03
Cm	243	1.93E-04
Cm	244	4.16E-03
Co	60	6.06E-02
Cs	134	2.66E-01
Cs	137	3.26E+02
Eu	152	4.71E-02
Eu	154	7.15E-01
Eu	155	9.26E-01
H-	3	6.76E-03
I-	129	9.96E-05
Nb	93 m	4.51E-03
Ni	59	1.09E-03
Ni	63	1.19E-01
Np	237	7.04E-04
Pa	231	2.34E-03
Pu	238	6.01E-03
Pu	239	7.52E-02
Pu	240	1.73E-02
Pu	241	4.62E-01
Pu	242	2.42E-06
Ra	226	1.02E-08
Ra	228	1.60E-07
Ru	106	5.42E-02
Sb	125	5.41E-01
Se	79	2.68E-04
Sm	151	7.20E+00
Sn	126	3.45E-03
Sr	90	2.83E+02
Tc	99	6.76E-02
Th	229	1.06E-02
Th	232	1.47E-06
U-	232	6.93E-07

U-	233	1.23E-04
U-	234	1.61E-01
U-	235	3.26E-06
U-	236	9.09E-06
U-	238	5.96E-05
Y-	90	2.58E+02
Zr	93	1.40E-02

- 5) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060(2)(d)).
- 6) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 7) The facility must be able to demonstrate workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 8) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 9) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H. (WAC 246-247-080(2)).
- 10) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards WAC 246-247-040 include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 11) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 12) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 13) Soil shall be excavated in accordance with the requirements of ALARACT Demonstration 5, TWRS ALARACT Demonstration for Soil Excavation (Using Hand Tools).
- 14) Pipe cuts shall be performed using a sawzall or tri-tool or equivalent.
- 15) The Annual Possession Quantity shall be tracked on a WDOH approved log.
- 16) When a HEPA filtered vacuum is to be used it must be in accordance with the requirements of DOE/RL-96-50 and the Conditions and Limitations outlined in WDOH approval documented in letter AIR 02-303, or the latest approved revision.
- 17) When a Portable Temporary Radioactive Air Emission Unit is to be used it must be in accordance with

the requirements of DOE/RL-96-75 and the Conditions and Limitations outlined in WDOH approval documented in the RTAM 02/15/2000, or the latest approved revision.

- 18) The number of pit entries will either be limited to 10 or total radionuclide content of all pit entries shall be less than the Annual Possession Quantity, and shall be tracked on a WDOH approved log.
- 19) The average surface contamination within the 241-AZ-101 and 241-AZ-102 pump pits shall be limited to less than 1,000,000 dpm/100 square cm beta/gamma and 700,000 dpm/100 square cm alpha. This shall be tracked on a WDOH approved log.
- 20) All pit access work shall be performed in accordance with TWRS ALARACT Demonstration 6, ALARACT Demonstration for Pit Access and TWRS ALARACT Demonstration 14, TWRS ALARACT Demonstration for Pit Work.
- 21) When welding is necessary to join pieces of contaminated equipment, contamination levels in the cut and weld area shall be reduced to levels equal to or less than 1000 dpm/100 square cm beta/gamma, and 20 dpm/100 square cm alpha. Number of welds and associated contaminations levels will be tracked on a WDOH approved log.
- 22) In-tank equipment removal and installation shall be performed in accordance with TWRS ALARACT Demonstration 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment.
- 23) Work within glove bags shall stop if sustained wind speeds exceed 30 miles per hour.
- 24) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 25) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 26) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 27) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 28) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 29) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 30) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the

emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6)).

- 31) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 32) Diffuse/Fugitive emissions shall be monitored using the near-field ambient air monitors as well as the Hanford Site perimeter air sampling locations. Sample collection and analysis shall follow that of the near field monitoring program and the Hanford Site perimeter air sampling program. All radionuclides that contribute greater than 10% of the potential-to-emit TEDE to the MEI, greater than 0.1 mrem/yr potential-to-emit TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls shall be measured. Results of potential releases and corresponding doses to the public from diffuse and fugitive emissions shall be reported in the Annual Air Emissions Report to confirm doses are less than the standards identified in (WAC 246-247-040(1)). Any change to the near-field ambient air monitoring program or the Hanford Site perimeter air sampling program must be approved by the department.
- 33) Pipe cuts shall be performed in a glove bag when levels of removable contamination in the cut and weld area are greater than 10,000 disintegrations per minute per 100 square centimeters beta gamma and 200 disintegrations per minute per 100 square centimeters alpha.

**DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR**

**PROJECT TITLE: OPERATION OF THE DANGEROUS AND RADIOACTIVE MIXED WASTE
STORAGE FACILITY (305-B)**

Date Approved: 03-Dec-02

Emission Unit Name: 305 B BUILDING

Emission Unit ID 197

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4)]

BARCT [WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
	HEPA	1	
	Fan	1	

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Federal and State Regulatory</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
40 CFR 61.93[b][4][i] & WAC 246-247-075[3]	Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	2 week sample/year
Sampling Requirements: Record Sample			

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

08/25/1995 Original NOC received August 8, 1995, approved via AIR 95-811 on August 25, 1995.

10/18/1998 Modification of activity to allow increase in possession quantity approved via AIR 98-1007 on October 8, 1998.

02/02/2001 NOC ID 105 combined with NOC ID 319.

09/17/2002 NOC Revision Form approved September 17, 2002 to provide an AOP condition change. Conditions and Limitations, AIR 02-1202, mailed on December 3, 2002.

11/14/2002 AOP Notification of Change Not Requiring Permit Revision received November 4, 2002. No new letter generated as issue resolved with NOC Revision approved on September 17, 2002.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 1.56E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for

- 2) This Notice of Construction is limited to $6.97\text{E-}02$ mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 3) **No activities, other than those explicitly described within this approval, shall be conducted without prior written approval. The approved activities are limited to:**
 the opening of Radioactive Mixed Waste (RMW) packages and unsealed waste drums containing closed RMW packages in the 305-B Radioactive Mix Waste Storage Facility.
- (1) Maximum number of open mixed waste or potentially mixed waste containers in hood at any given time to be changed from two packages and containers to four packages and containers;
 (2) Maximum number of unsealed waste drums containing mixed waste containers in room at any given time to be changed from two drums to five drums.

The number of potentially radioactive mixed waste containers is 1,000 containers.

The 305-B Building is used for the collection, consolidation, packaging, storage and preparation for transport of both dangerous and radioactive mixed waste (RMW). RMW is generated in volumes ranging from small milliliter-size vials to a maximum of 55-gallon drums generated from laboratory research activities in the 300 Area. RMW is brought to the 305-B Building in preparation for transport or, for small volumes, storage until enough waste is accumulated to fill a bulking container, usually a 55-gallon drum. RMW, with the exception of flammable RMW, is stored in the basement of the building, while flammable RMW is stored on the first floor in a flammable storage cabinet in accordance with the Uniform Fire Code. Sampling and repackaging activities occur in a 4-foot-wide fume hood that is High Efficiency Particulate Air (HEPA) filtered or in the storage area for those packages whose size prohibit use of the fume hood. The hood and basement area exhaust through a 10-inch diameter stack that is 32.9 feet above grade. Samples are transferred from the 305-B Building to existing analytical laboratories for analyses.

The 305-B Building is also used as a holding area for containers of hazardous waste that may contain trace levels of radionuclides. This "potentially radioactive mixed waste (PRMW)" must be analyzed for radioactivity prior to disposal. Historical experience has shown PRMW containers average less than 10 pCi/g of radioactivity. Waste drums containing packaged RMW (waste prepared by the waste generator) may be unsealed and opened in the room for sampling and/or repackaging. Packages removed from waste drums for sampling are briefly opened while the sample is collected. The package is sealed promptly after sampling is completed and open packages are not stored in the hood.

- 4) **The Annual Possession Quantity is limited to the following radionuclides (Curies/year):**
- | | | | | | | | |
|-------|---|-------------------|------|---|-------------------|-----|-------------------|
| Alpha | 0 | $5.50\text{E-}01$ | Beta | 0 | $5.50\text{E+}00$ | H-3 | $5.50\text{E+}01$ |
|-------|---|-------------------|------|---|-------------------|-----|-------------------|
- 5) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 6) **This condition was obsoleted on 10/22/2002.** The process is limited to the exact description described in the NOC.
Replaced by standard condition/limitation via AIR 02-1202.
- 7) **This condition was obsoleted on 10/22/2002.** The required controls are: HEPA Filtered Fume Hood and Room Exhaust.

- 8) **This condition was obsoleted on 10/22/2002.** This approval, with its conditions and limitations, constitutes an amendment to the Department's Radioactive Air Emissions License. This amendment must be included in the next revision of the Hanford Air Operating Permit.
Obsoleted by issuance of the Hanford Site Air Operating Permit.
- 9) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 10) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 11) **This condition was obsoleted on 10/22/2002.** U.S. DOE shall monitor this project or emission unit as follows: Continuous.
Replaced by standard condition/limitation via AIR 02-1202.
- 12) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
- 13) The facility must maintain a log in an approved format for this activity or emission unit.
- 14) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 15) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 16) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 17) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

- 18) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 19) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 20) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 21) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 22) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 23) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 24) All radionuclides are assumed to be either Americium-241 for alpha activity or Cesium-137 for beta activity and provides a conservative estimate of the potential to emit from the emission unit. In addition to the radionuclides of concern listed in the APQ, essentially any radionuclide isotope could be encountered. If a new isotope is encountered, the department shall be notified. At no time shall the emissions limits be exceeded.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: PORTABLE EXHAUSTER USE ON SINGLE SHELL (SST) TANKS DURING
SALTWELL PUMPING**

Date Approved: 25-Oct-02

Emission Unit Name: 296-P-45

Emission Unit ID 50

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	Prefilter	1	
	Heater	1	
	HEPA	2	2 HEPA's in series
	Fan	1	Fan is in operational stand-by

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
49 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Appendix B, Method 114(3)	All radionuclides which could contribute 10% of the potential EDE.	Continuous, collect samples biweekly at a minimum

Sampling Requirements: Active ventilation: continuous during operation.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

07/21/1997 Original NOC submitted on July 21, 1997 and was initially rejected (AIR 97-710) due to lack of information.

02/04/1998 1st revision of NOC was rejected on February 4, 1998 (AIR 98-202) due to lack of information.

12/16/1998 2nd revision approved on December 16, 1998 (AIR 98-1207).

03/11/1999 A telcom clarification approved on March 11, 1999 adjusted the Table 13-1, "Emissions Control Equipment Compliance For Portable Exhausters" regarding a delay in performance of the 168 performance test as required in accordance with 40 CFR 52, Appendix E Test Methods US DOE NOC ID 717. No documentation on file.

07/01/1999 4th revision added two tanks and increased the Abated PTE from 6.51E-07 mrem/yr to 6.76E-07 mrem/yr. Approval on July 31, 1999 (no approval letter, see revision form of the same date). No changes to conditions. US DOE NOC ID 781.

08/27/1999 3rd revision added two tanks and required ALARACT demonstration and required documentation to prove that no increase emissions occurred as a result of saltwell pumping in these two tanks. Approval on August 27, 1999 (AIR 99-809). No changes to conditions.

Printed on 28 Oct-02

06/26/2000 5th revision clarified Section 5 per NOC Revision Form on June 26, 2000.

12/18/2000 6th revision added the last two paragraphs in the Project Description above. Revised Section 2.5 of the original NOC. Approved on December 18, 2000 (no approval letter, see revision form of the same date). No changes to conditions.

05/07/2002 NOC Revision Forms approved on May 1, 2002 and September 5, 2002. AOP Administrative Amendment approved on August 6, 2002 to correct typographical errors. Modified NOC received September 3, 2002. Changes from the revisions and modification resulted in addition of 296-P-33, 296-P-34, and 200 Area Diffuse/Fugitive Emission Units. Conditions and Limitations for revisions, modification and AOP Administrative Amendment mailed on October 28, 2002 via AIR 02-1020.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to 4.51E-03 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to 9.03E+00 mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 3) **This process is limited to:**
the use of portable exhausters on single shell tanks during saltwell pumping. Specific single shell tanks covered include: 241-A-101, 241-AX-101, 241-BY-105, 241-BY-106, 241-C-103, 241-S-101, 241-S-102, 241-S-103, 241-S-106, 241-S-107, 241-S-109, 241-S-111, 241-S-112, 241-T-104, 241-T-110, 241-U-102, 241-U-103, 241-U-105, 241-U-106, 241-U-107, 241-U-108, 241-U-109 and 241-U-111.

Saltwell pumping of drainable liquid waste includes the following activities:

- Initial planning including waste compatibility studies, criticality analysis, equipment specification, and tank material balance determinations;
- Installation of saltwell screen;
- Jet pump assembly installation;
- Transferring the liquid waste (via saltwell pumping);
- Occasionally, additions of limited amounts of water are made to prevent plugging of the saltwell screen and transfer line;
- Flushing and cleaning plugs from transfer lines.

INSTALLATION OF THE SALTWELL SCREEN

A saltwell screen is a mechanical device, approximately 11 inches in diameter, which normally extends from the top of the waste to within 2 inches of the tank bottom. The 400-mesh size holes in the screen allow liquid waste to pass through the screen (enter the pump cavity) while preventing solid waste from migrating to the jet pump.

Water lancing of the waste could be necessary to facilitate installation of the saltwell screen. Water lancing normally uses up to 1,895 liters of hot water at low pressure (1,034 kilopascals) to penetrate the crust on the waste and create a circular entry area large enough for the screen. Water lancing activities shall follow the requirements outline in ALARACT 10, TWRS ALARACT Demonstration for Water Lancing. The water lance is a long pipe, up to 7.62 centimeters in diameter with a nozzle at the end that

is lowered into the tank, through a riser, via a mobile crane attached to a truck. A hose from a portable water tank is connected to the other end of the water lance. The flushing water to the water lance shall be turned on just before the lance reaches the waste surface to minimize water additions to the tank. The water lance withdrawal steps are essentially the reverse of the insertion sequence. The use of this water lance requires that the lance be raised and lowered into the waste multiple times so that a large enough hole can be formed in the waste to accommodate the screen. Alternately, a newer water lance design to accomplish the same task could be used. The new lance has an 28-centimeter diameter and multiple nozzles on the bottom to facilitate waste penetration, and is designed to create a hole in the waste large enough to accommodate the saltwell screen with one insertion of the lance into the waste. This design requires less water volume and operates at a pressure limited to (20,685 kilopascals). During removal of a lance from a tank, portable water wands are used to wash waste residue from the outside of the water lance until radiation readings are within specified limits. The water lance is placed in a protective bag during the removal process.

The saltwell screen is connected to a source of flushing water by a hose at the top of the screen. The screen is rigged for lifting by a mobile crane. The saltwell screen assembly is lowered slowly into the pit and riser until the screen flange rests on the riser opening. The riser is capped until jet pump assembly is scheduled for installation.

The entire operation of installing a saltwell screen, including water lancing, generally takes less than eight hours. Radionuclide control is maintained mechanically by use of a spray ring that rests on top of the riser and allows the water lance to telescope through the ring. Although there is no physical contact between the lance outside diameter and the spray ring inside diameter, control of radionuclides is achieved by spraying water over this interface as the lance is lowered, which also helps to minimize the potential for sparking as well as controlling radionuclides. Additional radionuclide control is achieved by limiting the lowering of the lance to a maximum speed of approximately 1 foot per second. Also, this operation is performed in accordance with formal procedures and radiation surveys during the actual work activity to ensure containment of radionuclides. Pre-job and post-job surveys are performed to verify containment. The actual water lancing time usually takes approximately 30 minutes to 2 hours.

In tanks with passive ventilation water lancing activities shall not exceed 72 hours of actual water lancing.

JET PUMP INSTALLATION

Water lancing of the salt screen and waste inside the saltwell screen might be necessary to facilitate jet pump assembly installation within the screen. If water lancing is required, this shall be performed as described above. Following preoperational checks of the complete jet pump assembly, the pump assembly will be raised to a vertical position by a mobile crane and slowly lowered into the saltwell screen until the pump support plate rests on top of the saltwell screen flange. Jet pump installation activities shall follow the requirements of ALARACT 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment. A small amount of water is passed through the dip tubes while the pump is lowered into the screen to prevent plugging of the dip tubes. The dip tubes are half-inch carbon steel tubes used as instrumentation to monitor waste level and specific gravity. Small amounts of water are also passed through the dilution tube to prevent plugging. The dilution tube allows water to be added to the tank to prevent plugging of the screen. In some cases, instrumentation lines are installed as part of the saltwell pump assembly; in other cases, instrumentation lines are installed after the assembly is installed. The entire operation of installing a jet pump assembly generally takes less than four hours.

TRANSFERRING THE WASTE (SALTWELL PUMPING)

The discharge of the jet pump assembly shall be connected to the tank farm transfer system by use of a flexible jumper assembly located within the pit. The pump pits shall be equipped with leak detectors to help detect liquid waste leaks. If leaking is detected, pumping automatically is stopped. Occasionally water will be added to the tank via a pipe from an outside storage tank to prevent plugging of or to remove plugs from the saltwell screen and pump equipment. The water will be piped from a storage tank through a metering system and shall be at a rate of 280 liters per minute or less. Entry into the tank is made through the pump pit via an existing port on the pit cover and into the saltwell screen.

The concrete or steel cover block shall be reinstalled before starting the pumping operation. The cover contains penetrations for the various valve handles, electric cables, air, water, and sample lines. Following testing of the equipment, saltwell pumping begins and could continue for several months to several years depending on the initial volume of waste to be pumped and the rate liquid drains to the saltwell. Periodic surveillances and operational checks will occur during saltwell pumping. A portable exhaustor will be available for saltwell pumping if and when needed and will operate in the event that flammable gas levels exceed 25 percent of the LFL during the pumping campaign or used in conjunction with industrial health and hygiene practices for worker comfort and safety. The portable exhaustor shall be isolated from the tank by an isolation valve when the exhaustor is not in use.

FLUSHING AND CLEANING PLUGS FROM TRANSFER LINES

The waste transfer operations involve the pumping of liquid waste that contains dissolved solids. These solids can precipitate out of solution anywhere in the transfer path and cause blockage. If blockage is detected in the system, flushing the affected components with hot water will be necessary. Other techniques to free blockages could include pressurization, use of heat tracing, temporary jumpers, and hydraulic scouring. The hot water will be introduced to the system to be flushed through a pressure manifold by piping connected directly to the jet pump, or bypassing the jet pump and connected directly to a jumper or nozzle. All piping connections are designed to be leak tight and the pit cover block shall be installed before pressurization. If pressurization beyond that obtained from the tank farms water system or supply truck (i.e., approximately 1,034 kilopascals) is necessary to remove blockage, an engineering evaluation shall be performed to determine the maximum allowable pressure for operation. At a minimum, flushing will be performed when the system is shut down for any length of time and at the end of a saltwell pumping campaign.

Flushing of the transfer lines and/or plug removal will be performed in accordance with operating procedures and radiation surveys during the actual work activity to ensure containment of radionuclides. Pre-job and post-job surveys shall be performed to verify containment. This activity has been conducted previously without incident during and after waste transfers in actively and passively ventilated SSTs and actively ventilated DSTs. Flushing of transfer lines could be performed with or without an operating portable exhaustor.

SALT CAKE DISSOLUTION

At Tank 241-U-107, water additions may be made to the top of the salt cake to determine how much of the salt cake can be dissolved and removed during saltwell pumping. After the supernate is saltwell pumped from this tank, a low flow of water (approximately 7 to 16 liters per minute) is planned to be sprinkled on top of a portion of the salt cake's surface to enhance dissolution. The water application

system will consist of water supply tubing inserted through an existing riser and one or more low volume sprinklers that can apply water of varying temperatures. The water will be provided by the tank farm's water system or supply truck.

Application of dissolution water is expected to last for approximately three months. Dissolution data and video obtained at Tank 241-U-107 will be utilized for planning future salt cake dissolution efforts. Salt cake dissolution activities at Tank 241-U-107 could be conducted with or without an operating portable exhauster.

When a portable exhauster is required for saltwell pumping or the performance of supporting activities, the exhauster will draw warm moist air from the tank, heat and filter the air, and release the air to the environment. During active ventilation, fresh air, drawn into the tank vapor space through a breather filter, will dilute and disperse any flammable gases present. In the event a portable exhauster is installed at a tank but is not running and the tank is being pumped under passive ventilation, the portable exhauster shall be valved off and air shall enter or exit the tank through the breather filter, depending on the tank's internal pressure relative to atmospheric pressure. Each breather filter shall consist of a housing that contains a HEPA filter, an outlet screen, and a small seal loop. During passive ventilation, an isolation valve normally will be open to allow air flow between the tank vapor space and the outside atmosphere through the filter. Air flowing to and from the tank will pass horizontally through the filter and vertically through the downward-facing exit weather hood. Seal loops, installed in the exhaust lines, are designed as a safety feature to prevent a highly unlikely accident in which over pressurization occurs when the HEPA filter is isolated for occasional (infrequent) maintenance.

Air from the tank shall be heated to reduce the relative humidity before passing through the prefilter. The air shall pass through the prefilter, two HEPA filters in series, a fan and discharge through a stack. The stack shall contain a section that allows for the installation of air flow measuring and temporary sampling devices. Any moisture that might accumulate inside the exhauster shall be collected in a drain system, routed to a seal pot, and returned to the tank.

Flexible or rigid ductwork (depending on the design at each tank farm) shall be used to connect the exhauster inlet to the tank riser. Precautionary measures to protect the air pathway during connection of the ductwork to the tank riser shall include installation of an isolation valve in the riser to minimize the time tank contents are exposed to the air, and shall take into account abrasion, leakage, tear strength, tensile strength, air stream temperature, and outdoor exposure conditions.

The prefilter will increase the life of the HEPA filters by trapping the larger airborne particles allowing for a more economical operating system. As low as reasonably achievable (ALARA) concepts will be applied to allow less frequent change out of the HEPA filters, thereby reducing exposure of personnel to radiation sources.

The HEPA filters shall meet the requirements of ASME AG-1, Section FC, and the requirements outline in the December 1998, Routine Technical Assistance Meeting and shall be tested annually to requirements of ASME N510, Section 10. The HEPA filters shall be nuclear grade throw-away extend-media dry-type in a rigid frame having a minimum particle collection efficiency of 99.95 percent for 0.3 micrometer median diameter, thermally-generated dioctylphthalate particles or other specified challenge aerosols. Pressure drop of a clean filter shall be a maximum of 1 inch water gauge at rated flow. The frame shall be corrosion resistant for the air stream design conditions. Each filter shall have a gelatinous seal gasket material that will be on the air inlet gasket surface.

The HEPA filter housing will provide a sealed barrier for the confinement of airborne radionuclides and will serve to encapsulate and hold the HEPA filter. The filter housing will provide for the attachment of pressure differential measurement components. Each filter housing will meet the applicable sections of ASME N509 and the test requirements of ASME N510. The filter housings shall be leak tested using the pressure decay method in accordance with ASME N510. Leakage shall not exceed 0.3 percent of the housing volume per hour.

The test sections shall provide a means for in place testing of the HEPA filters. Testing will confirm that any airborne radionuclide particles are captured to the level of efficiency of the installed HEPA filter. One test section shall be placed downstream of the prefilter section and upstream of the first HEPA filter section. The second test section shall be placed between the first stage HEPA filter housing and the second stage HEPA filter housing. For the 296-P-33 and 296-P-34 there is only one HEPA test section between the first stage HEPA and the second stage HEPA but the capability shall exist to individually test each HEPA filter.

The fan shall be a centrifugal type and be statically and dynamically balanced as an assembly. The exhaust stack houses the air velocity probe (for measurement of stack velocity) and the air sampling probe. Flexible ductwork will be used to connect the fan outlet to the stack.

4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Ac - 227	7.09E-02	Am - 241	6.55E+03	Am - 243	7.62E+01
Ba - 137 m	6.59E+06	C - 14	1.03E+03	Cd - 113 m	2.05E+03
Cm - 242	1.09E+01	Cm - 243	1.28E+00	Cm - 244	2.01E+01
Co - 60	1.60E+03	Cs - 134	8.15E+00	Cs - 137	6.96E+06
Eu - 152	1.27E+02	Eu - 154	1.49E+04	Eu - 155	1.02E+04
H - 3	4.02E+03	I - 129	1.34E+01	Nb - 93 m	4.98E+02
Ni - 59	1.51E+02	Ni - 63	1.40E+04	Np - 237	2.41E+01
Pa - 231	1.89E-01	Pu - 238	2.55E+02	Pu - 239	1.10E+04
Pu - 240	1.72E+03	Pu - 241	1.18E+04	Pu - 242	7.99E-02
Ra - 226	9.55E-03	Ra - 228	5.73E+00	Ru - 106	2.11E-03
Sb - 125	9.67E+02	Se - 79	1.37E+01	Sm - 151	4.50E+05
Sn - 123	8.14E+01	Sr - 90	5.90E+06	Tc - 99	6.31E+03
Th - 229	2.53E-01	Th - 232	4.42E-01	U - 232	5.77E+00
U - 233	2.96E+01	U - 234	4.02E+01	U - 235	1.48E+00
U - 236	1.21E+00	U - 238	3.77E+01	Y - 90	5.90E+06
Zr - 93	6.35E+02				

- 5) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 6) The facility must be able to demonstrate that the workers associated with this emission unit are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
- 7) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 8) The department reserves the right to inspect and audit this unit during construction and operation,

including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080(1)).

- 9) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 10) All reports and records must be kept and reported according to 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 11) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 12) All pre-operational activities described in the NOC must be satisfactorily completed prior to waste transfer.
- 13) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

- 14) All measured or calculated emissions must be reported annually (WAC 246-247-080(3))
- 15) Portable exhausters will be available during transfer and used when flammable gases concentrations exceed 25 percent of the lower flammability limit (LFL) during salt-well pumping.
- 16) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 17) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 18) The department retains the right to conduct its own stack sampling, environmental monitoring or other

- testing, as required around this unit to assure compliance. If the department so decides, the facility must make provision for such testing (WAC 246-247-075(9) and (10).
- 19) All other commitments made in the NOC are considered requirements. Any deviation from those commitments must be approved by the department.
 - 20) **This condition was obsoleted on 9/12/2002.** Periodic confirmatory sampling is required on passively ventilated tanks. It is outlined in the draft Air Operating Permit. It must consist of annual verification of smearable levels of activity on the inside surface of the ducting downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent, if one exists.
Obsoleted as condition moved to 200 Area Diffuse and Fugitive Emission Unit.
 - 21) All portable exhausters used in the salt-well pumping must meet the requirements specified in 40 CFR 61, Subpart H and associated requirements.
 - 22) **This condition was obsoleted on 9/12/2002.** This approval, with its Conditions and Limitations, constitutes an amendment to the Department's Radioactive Air Emission License. This amendment must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(e) and (2)(c)).
Obsoleted by issuance of the Hanford Air Operating Permit (July 2001).
 - 23) **This condition was obsoleted on 7/31/1999.** These Conditions and Limitations must be proceduralized prior to starting the activities described in the Notice of Construction. All activities are limited to these tanks: 241-AX-101, 241-BY-105, 241-BY-106, 241-S-101, 241-S-102, 241-S-103, 241-S-106, 241-S-107, 241-S-109, 241-S-111, 241-S-112, 241-U-103, 241-U-105, 241-U-106, 241-U-107, 241-U-108, 241-U-109, 241-U-111.
Obsoleted as condition is included in the process description and is reflected in a standard condition.
 - 24) **This condition was obsoleted on 9/12/2002.** These Conditions and Limitations must be proceduralized prior to starting the activities described in the Notice of Construction. All activities are limited to these tanks: 241-AX-101, 241-BY-105, 241-BY-106, 241-S-101, 241-S-102, 241-S-103, 241-S-106, 241-S-107, 241-S-109, 241-S-111, 241-S-112, 241-U-103, 241-U-105, 241-U-106, 241-U-107, 241-U-108, 241-U-109, 241-U-111, 241-T-104, 241-T-110, 241-A-101 and 241-U-102.
Obsoleted as condition is included in the process description and is reflected in a standard condition via AIR 02-1030.
 - 25) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).
 - 26) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
 - 27) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
 - 28) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
 - 29) Prior to operation of the exhauster all exhaust duct connections shall be checked to ensure there is no air in-leakage. The duct shall be pressure tested in accordance with the requirements of AG-1 Section SA.
 - 30) Monthly checks shall be performed on the exhaust duct to ensure there is no degradation of the

following activities performed:

- a. Inspect pitot tube systems for leaks, at least annually.
 - b. Inspect nozzles for alignment, presence of deposits, damage to sharp-edged nozzles, or other potentially degrading factors (corrosion, physical damage, etc) at least annually.
 - c. Check transport lines and if visible deposits are presents perform cleaning, at least annually.
 - d. Checks to ensure the tightness of all fittings and connections as well as a leak test of the sample system, at least annually.
 - e. Inspect rotameters of sampling systems for presence of foreign matter at the start of each sampling period.
 - f. Check the response of stack flow rate monitoring and control system at least quarterly.
 - g. A functional/calibration check of monitoring system instrumentation shall be performed at least annually.
 - h. USDOE shall provide to WDOH for review and approval copies of the procedures used to perform the above activities.
- 32) HEPA filters shall be individually tested, annually, to the requirements of ASME N510, and shall have a minimum efficiency of 99.95%.
- 33) The following information will be tracked on a WDOH approved log:
- a. Single Shell Tank being saltwell pumped;
 - b. Exhauster being used;
 - c. Hours of operations.

**DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR**

**PROJECT TITLE: PORTABLE EXHAUSTER USE ON SINGLE SHELL (SST) TANKS DURING
SALTWELL PUMPING**

Date Approved: 25-Oct-02

Emission Unit Name: 296-P-43

Emission Unit ID 57

This is a MINOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4);
BARCT [WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
	Prefilter	1	
	Heater	1	
	HEPA	2	HEPAs in series
	Fan	1	Fan is in operational standby

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Federal and State Regulatory</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Appendix B, Method 114(3)	TOTAL ALPHA TOTAL BETA	4 weeks/year

Sampling Requirements: Active ventilation: continuous during operation.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

07/21/1997 Original NOC submitted on July 21, 1997 and was initially rejected (AIR 97-710) due to lack of information.

02/04/1998 1st revision of NOC was rejected on February 4, 1998 (AIR 98-202) due to lack of information.

12/16/1998 2nd revision approved on December 16, 1998 (AIR 98-1207).

03/11/1999 A teleconference approved on March 11, 1999 adjusted the Table 13-1, "Emissions Control Equipment Compliance For Portable Exhausters" regarding a delay in performance of the 168 performance test as required in accordance with 40 CFR 52, Appendix E Test Methods. US DOE NOC ID 717. No documentation on file.

07/31/1999 4th revision added two tanks and increased the Abated PTE from 6.51E-07 mrem/yr to 6.76E-07 mrem/yr. Approval on July 31, 1999 (no approval letter, see revision form of the same date). No changes to conditions. US DOE NOC ID 761.

08/27/1999 3rd revision added two tanks and required ALARACT demonstration and required documentation to prove that no increase emissions occurred as a result of saltwell pumping in these two tanks. Approval on August 27, 1999 (AIR 99-809). No changes to conditions.

06/26/2000 5th revision clarified Section 5 per NOC Revision Form on June 26, 2000.

Printed on 28-Oct-02

12/18/2000 6th revision added the last two paragraphs in the Project Description above. Revised Section 6.5 of the original NOC. Approval on December 18, 2000 (no approval letter, see revision form of the same date). No changes to conditions

05/07/2002 NOC Revision Forms approved on May 1, 2002 and September 5, 2002. AOP Administrative Amendment approved on August 5, 2002 to correct typographical errors. Modified NOC received September 3, 2002. Changes from the revisions and modification resulted in addition of 296-P-33, 296-P-34, and 200 Area Diffuse/Fugitive Emission Units. Conditions and Limitations for revisions, modification and AOP Administrative Amendment mailed on October 28, 2002 via AIR 02-1020.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $4.51 \text{E-}03$ mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to $9.03 \text{E+}00$ mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 3) **This process is limited to:**
the use of portable exhausters on single shell tanks during saltwell pumping. Specific single shell tanks covered include: 241-A-101, 241-AX-101, 241-BY-105, 241-BY-106, 241-C-103, 241-S-101, 241-S-102, 241-S-103, 241-S-106, 241-S-107, 241-S-109, 241-S-111, 241-S-112, 241-T-104, 241-T-110, 241-U-102, 241-U-103, 241-U-105, 241-U-106, 241-U-107, 241-U-108, 241-U-109 and 241-U-111.

Saltwell pumping of drainable liquid waste includes the following activities:

- Initial planning including waste compatibility studies, criticality analysis, equipment specification, and tank material balance determinations;
- Installation of saltwell screen;
- Jet pump assembly installation;
- Transferring the liquid waste (via saltwell pumping);
- Occasionally, additions of limited amounts of water are made to prevent plugging of the saltwell screen and transfer line;
- Flushing and cleaning plugs from transfer lines.

INSTALLATION OF THE SALTWELL SCREEN

A saltwell screen is a mechanical device, approximately 11 inches in diameter, which normally extends from the top of the waste to within 2 inches of the tank bottom. The 400-mesh size holes in the screen allow liquid waste to pass through the screen (enter the pump cavity) while preventing solid waste from migrating to the jet pump.

Water lancing of the waste could be necessary to facilitate installation of the saltwell screen. Water lancing normally uses up to 1,895 liters of hot water at low pressure (1,034 kilopascals) to penetrate the crust on the waste and create a circular entry area large enough for the screen. Water lancing activities shall follow the requirements outline in ALARACT 10, TWRS ALARACT Demonstration for Water Lancing. The water lance is a long pipe, up to 7.62 centimeters in diameter with a nozzle at the end that is lowered into the tank, through a riser, via a mobile crane attached to a truck. A hose from a portable water tank is connected to the other end of the water lance. The flushing water to the water lance shall be

turned on just before the lance reaches the waste surface to minimize water additions to the tank. The water lance withdrawal steps are essentially the reverse of the insertion sequence. The use of this water lance requires that the lance be raised and lowered into the waste multiple times so that a large enough hole can be formed in the waste to accommodate the screen. Alternately, a newer water lance design to accomplish the same task could be used. The new lance has an 28-centimeter diameter and multiple nozzles on the bottom to facilitate waste penetration, and is designed to create a hole in the waste large enough to accommodate the saltwell screen with one insertion of the lance into the waste. This design requires less water volume and operates at a pressure limited to (20,685 kilopascals). During removal of a lance from a tank, portable water wands are used to wash waste residue from the outside of the water lance until radiation readings are within specified limits. The water lance is placed in a protective bag during the removal process.

The saltwell screen is connected to a source of flushing water by a hose at the top of the screen. The screen is rigged for lifting by a mobile crane. The saltwell screen assembly is lowered slowly into the pit and riser until the screen flange rests on the riser opening. The riser is capped until jet pump assembly is scheduled for installation.

The entire operation of installing a saltwell screen, including water lancing, generally takes less than eight hours. Radionuclide control is maintained mechanically by use of a spray ring that rests on top of the riser and allows the water lance to telescope through the ring. Although there is no physical contact between the lance outside diameter and the spray ring inside diameter, control of radionuclides is achieved by spraying water over this interface as the lance is lowered, which also helps to minimize the potential for sparking as well as controlling radionuclides. Additional radionuclide control is achieved by limiting the lowering of the lance to a maximum speed of approximately 1 foot per second. Also, this operation is performed in accordance with formal procedures and radiation surveys during the actual work activity to ensure containment of radionuclides. Pre-job and post-job surveys are performed to verify containment. The actual water lancing time usually takes approximately 30 minutes to 2 hours.

In tanks with passive ventilation water lancing activities shall not exceed 72 hours of actual water lancing.

JET PUMP INSTALLATION

Water lancing of the salt screen and waste inside the saltwell screen might be necessary to facilitate jet pump assembly installation within the screen. If water lancing is required, this shall be performed as described above. Following preoperational checks of the complete jet pump assembly, the pump assembly will be raised to a vertical position by a mobile crane and slowly lowered into the saltwell screen until the pump support plate rests on top of the saltwell screen flange. Jet pump installation activities shall follow the requirements of ALARACT 13, TWRs ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment. A small amount of water is passed through the dip tubes while the pump is lowered into the screen to prevent plugging of the dip tubes. The dip tubes are half-inch carbon steel tubes used as instrumentation to monitor waste level and specific gravity. Small amounts of water are also passed through the dilution tube to prevent plugging. The dilution tube allows water to be added to the tank to prevent plugging of the screen. In some cases, instrumentation lines are installed as part of the saltwell pump assembly; in other cases, instrumentation lines are installed after the assembly is installed. The entire operation of installing a jet pump assembly generally takes less than four hours.

TRANSFERRING THE WASTE (SALTWELL PUMPING)

The discharge of the jet pump assembly shall be connected to the tank farm transfer system by use of a flexible jumper assembly located within the pit. The pump pits shall be equipped with leak detectors to help detect liquid waste leaks. If leaking is detected, pumping automatically is stopped. Occasionally water will be added to the tank via a pipe from an outside storage tank to prevent plugging of or to remove plugs from the saltwell screen and pump equipment. The water will be piped from a storage tank through a metering system and shall be at a rate of 280 liters per minute or less. Entry into the tank is made through the pump pit via an existing port on the pit cover and into the saltwell screen.

The concrete or steel cover block shall be reinstalled before starting the pumping operation. The cover contains penetrations for the various valve handles, electric cables, air, water, and sample lines. Following testing of the equipment, saltwell pumping begins and could continue for several months to several years depending on the initial volume of waste to be pumped and the rate liquid drains to the saltwell. Periodic surveillances and operational checks will occur during saltwell pumping. A portable exhaustor will be available for saltwell pumping if and when needed and will operate in the event that flammable gas levels exceed 25 percent of the LFL during the pumping campaign or used in conjunction with industrial health and hygiene practices for worker comfort and safety. The portable exhaustor shall be isolated from the tank by an isolation valve when the exhaustor is not in use.

FLUSHING AND CLEANING PLUGS FROM TRANSFER LINES

The waste transfer operations involve the pumping of liquid waste that contains dissolved solids. These solids can precipitate out of solution anywhere in the transfer path and cause blockage. If blockage is detected in the system, flushing the affected components with hot water will be necessary. Other techniques to free blockages could include pressurization, use of heat tracing, temporary jumpers, and hydraulic scouring. The hot water will be introduced to the system to be flushed through a pressure manifold by piping connected directly to the jet pump, or bypassing the jet pump and connected directly to a jumper or nozzle. All piping connections are designed to be leak tight and the pit cover block shall be installed before pressurization. If pressurization beyond that obtained from the tank farms water system or supply truck (i.e., approximately 1,034 kilopascals) is necessary to remove blockage, an engineering evaluation shall be performed to determine the maximum allowable pressure for operation. At a minimum, flushing will be performed when the system is shut down for any length of time and at the end of a saltwell pumping campaign.

Flushing of the transfer lines and/or plug removal will be performed in accordance with operating procedures and radiation surveys during the actual work activity to ensure containment of radionuclides. Pre-job and post-job surveys shall be performed to verify containment. This activity has been conducted previously without incident during and after waste transfers in actively and passively ventilated SSTs and actively ventilated DSTs. Flushing of transfer lines could be performed with or without an operating portable exhaustor.

SALT CAKE DISSOLUTION

At Tank 241-U-107, water additions may be made to the top of the salt cake to determine how much of the salt cake can be dissolved and removed during saltwell pumping. After the supernate is saltwell pumped from this tank, a low flow of water (approximately 7 to 16 liters per minute) is planned to be sprinkled on top of a portion of the salt cake's surface to enhance dissolution. The water application system will consist of water supply tubing inserted through an existing riser and one or more low volume sprinklers that can apply water of varying temperatures. The water will be provided by the tank

farms water system or supply truck.

Application of dissolution water is expected to last for approximately three months. Dissolution data and video obtained at Tank 241-U-107 will be utilized for planning future salt cake dissolution efforts. Salt cake dissolution activities at Tank 241-U-107 could be conducted with or without an operating portable exhauster.

When a portable exhauster is required for saltwell pumping or the performance of supporting activities, the exhauster will draw warm moist air from the tank, heat and filter the air, and release the air to the environment. During active ventilation, fresh air, drawn into the tank vapor space through a breather filter, will dilute and disperse any flammable gases present. In the event a portable exhauster is installed at a tank but is not running and the tank is being pumped under passive ventilation, the portable exhauster shall be valved off and air shall enter or exit the tank through the breather filter, depending on the tank's internal pressure relative to atmospheric pressure. Each breather filter shall consist of a housing that contains a HEPA filter, an outlet screen, and a small seal loop. During passive ventilation, an isolation valve normally will be open to allow air flow between the tank vapor space and the outside atmosphere through the filter. Air flowing to and from the tank will pass horizontally through the filter and vertically through the downward-facing exit weather hood. Seal loops, installed in the exhaust lines, are designed as a safety feature to prevent a highly unlikely accident in which over pressurization occurs when the HEPA filter is isolated for occasional (infrequent) maintenance.

Air from the tank shall be heated to reduce the relative humidity before passing through the prefilter. The air shall pass through the prefilter, two HEPA filters in series, a fan and discharge through a stack. The stack shall contain a section that allows for the installation of air flow measuring and temporary sampling devices. Any moisture that might accumulate inside the exhauster shall be collected in a drain system, routed to a seal pot, and returned to the tank.

Flexible or rigid ductwork (depending on the design at each tank farm) shall be used to connect the exhauster inlet to the tank riser. Precautionary measures to protect the air pathway during connection of the ductwork to the tank riser shall include installation of an isolation valve in the riser to minimize the time tank contents are exposed to the air, and shall take into account abrasion, leakage, tear strength, tensile strength, air stream temperature, and outdoor exposure conditions.

The prefilter will increase the life of the HEPA filters by trapping the larger airborne particles allowing for a more economical operating system. As low as reasonably achievable (ALARA) concepts will be applied to allow less frequent change out of the HEPA filters, thereby reducing exposure of personnel to radiation sources.

The HEPA filters shall meet the requirements of ASME AG-1, Section FC, and the requirements outline in the December 1998, Routine Technical Assistance Meeting and shall be tested annually to requirements of ASME N510, Section 10. The HEPA filters shall be nuclear grade throw-away extend-media dry-type in a rigid frame having a minimum particle collection efficiency of 99.95 percent for 0.3 micrometer median diameter, thermally-generated dioctylphthalate particles or other specified challenge aerosols. Pressure drop of a clean filter shall be a maximum of 1 inch water gauge at rated flow. The frame shall be corrosion resistant for the air stream design conditions. Each filter shall have a gelatinous seal gasket material that will be on the air inlet gasket surface.

The HEPA filter housing will provide a sealed barrier for the confinement of airborne radionuclides and will serve to encapsulate and hold the HEPA filter. The filter housing will provide for the attachment of

pressure differential measurement components. Each filter housing will meet the applicable sections of ASME N509 and the test requirements of ASME N510. The filter housings shall be leak tested using the pressure decay method in accordance with ASME N510. Leakage shall not exceed 0.3 percent of the housing volume per hour.

The test sections shall provide a means for in place testing of the HEPA filters. Testing will confirm that any airborne radionuclide particles are captured to the level of efficiency of the installed HEPA filter. One test section shall be placed downstream of the prefilter section and upstream of the first HEPA filter section. The second test section shall be placed between the first stage HEPA filter housing and the second stage HEPA filter housing. For the 296-P-33 and 296-P-34 there is only one HEPA test section between the first stage HEPA and the second stage HEPA but the capability shall exist to individually test each HEPA filter.

The fan shall be a centrifugal type and be statically and dynamically balanced as an assembly. The exhaust stack houses the air velocity probe (for measurement of stack velocity) and the air sampling probe. Flexible ductwork will be used to connect the fan outlet to the stack.

4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Ac - 227	7.09E-02	Am - 241	6.55E+03	Am - 243	7.62E+01
Ba - 137 m	6.59E+06	C - 14	1.03E+03	Cd - 113 m	2.05E+03
Cm - 242	1.09E+01	Cm - 243	1.28E+00	Cm - 244	2.01E+01
Co - 60	1.60E+03	Cs - 134	8.15E+00	Cs - 137	6.96E+06
Eu - 152	1.27E+02	Eu - 154	1.49E+04	Eu - 155	1.02E+04
H - 3	4.02E+03	I - 129	1.34E+01	Nb - 93 m	4.98E+02
Ni - 59	1.51E+02	Ni - 63	1.40E+04	Np - 237	2.41E+01
Pa - 231	1.89E-01	Pu - 238	2.55E+02	Pu - 239	1.10E+04
Pu - 240	1.72E+03	Pu - 241	1.18E+04	Pu - 242	7.99E-02
Ra - 226	9.55E-03	Ra - 228	5.73E+00	Ru - 106	2.11E-03
Sb - 125	9.67E+02	Se - 79	1.37E+01	Sm - 151	4.50E+05
Sn - 123	8.14E+01	Sr - 90	5.90E+06	Tc - 99	6.31E+03
Th - 229	2.53E-01	Th - 232	4.42E-01	U - 232	5.77E+00
U - 233	2.96E+01	U - 234	4.02E+01	U - 235	1.48E-00
U - 236	1.21E+00	U - 238	3.77E+01	Y - 90	5.90E+06
Zr - 93	6.35E+02				

5) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).

6) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

7) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced

inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).

- 8) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 9) **This condition was obsoleted on 9/12/2002.** Periodic confirmatory sampling is required on passively ventilated tanks. It is outlined in the draft Air Operating Permit. It must consist of annual verification of smearable levels of activity on the inside surface of the ducting downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent, if one exists.
Obsoleted as condition moved to 200 Area Diffuse and Fugitive Emission Unit.
- 10) All portable exhausters used in the salt-well pumping must meet the requirements specified in 40 CFR 61, Subpart H and associated requirements.
- 11) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 12) **This condition was obsoleted on 9/12/2002.** This approval, with its Conditions and Limitations, constitutes an amendment to the Department's Radioactive Air Emission License. This amendment must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(c) and (2)(c)).
Obsoleted by issuance of the Hanford Air Operating Permit (July 2001).
- 13) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 14) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 15) Portable exhausters will be available during transfer and used when flammable gases concentrations exceed 25 percent of the lower flammability limit (LFL) during salt-well pumping.
- 16) All other commitments made in the NOC are considered requirements. Any deviation from those commitments must be approved by the department.
- 17) The department reserves the right to inspect and audit this unit during construction and operation, including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080(1)).
- 18) All pre-operational activities described in the NOC must be satisfactorily completed prior to waste transfer.
- 19) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer

applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

20) The department retains the right to conduct its own stack sampling, environmental monitoring or other testing, as required around this unit to assure compliance. If the department so decides, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).

21) The facility must be able to demonstrate that the workers associated with this emission unit are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).

22) **This condition was obsoleted on 7/31/1999.** These Conditions and Limitations must be proceduralized prior to starting the activities described in the Notice of Construction. All activities are limited to these tanks: 241-AX-101, 241-BY-105, 241-BY-106, 241-S-101, 241-S-102, 241-S-103, 241-S-106, 241-S-107, 241-S-109, 241-S-111, 241-S-112, 241-U-103, 241-U-105, 241-U-106, 241-U-107, 241-U-108, 241-U-109, 241-U-111.

Obsoleted as condition is included in the process description and is reflected in a standard condition.

23) The facility must be able to demonstrate the reliability and accuracy of emission data and other test results from this emission unit (WAC 246-247-075(13)).

24) **This condition was obsoleted on 9/12/2002.** These Conditions and Limitations must be proceduralized prior to starting the activities described in the Notice of Construction. All activities are limited to these tanks: 241-AX-101, 241-BY-105, 241-BY-106, 241-S-101, 241-S-102, 241-S-103, 241-S-106, 241-S-107, 241-S-109, 241-S-111, 241-S-112, 241-U-103, 241-U-105, 241-U-106, 241-U-107, 241-U-108, 241-U-109, 241-U-111, 241-T-104, 241-T-110, 241-A-101 and 241-U-102.

Obsoleted as condition is included in the process description and is reflected in a standard condition via AIR 02-1020.

25) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).

26) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

27) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).

28) Monthly checks shall be performed on the exhaust duct to ensure there is no degradation of the ductwork or leakage at the connection points.

29) Prior to operation of the exhauster all exhaust duct connections shall be checked to ensure there is no air in-leakage. The duct shall be pressure tested in accordance with the requirements of AG-1 Section SA.

30) Within one year of initial use of the exhauster the emission unit monitoring system shall have the following activities performed:

a. Inspect pitot tube systems for leaks, at least annually.

- b. Inspect nozzles for alignment, presence of deposits, damage to sharp-edged nozzles, or other potentially degrading factors (corrosion, physical damage, etc) at least annually.
 - c. Check transport lines and if visible deposits are presents perform cleaning, at least annually.
 - d. Checks to ensure the tightness of all fittings and connections as well as a leak test of the sample system, at least annually.
 - e. Inspect rotameters of sampling systems for presence of foreign matter at the start of each sampling period.
 - f. Check the response of stack flow rate monitoring and control system at least quarterly.
 - g. A functional/calibration check of monitoring system instrumentation shall be performed at least annually.
 - h. USDOE shall provide to WDOH for review and approval copies of the procedures used to perform the above activities.
- 31) HEPA filters shall be individually tested, annually, to the requirements of ASME NS10, and shall have a minimum efficiency of 99.95%.
- 32) The following information will be tracked on a WDOH approved log:
- a. Single Shell Tank being saltwell pumped;
 - b. Exhauster being used;
 - c. Hours of operations.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: PORTABLE EXHAUSTER USE ON SINGLE SHELL (SST) TANKS DURING
SALTWELL PUMPING**

Date Approved: 25-Oct-02

Emission Unit Name: 296-P-44

Emission Unit ID 58

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
	Prefilter	1	
	Heater	1	
	HEPA	2	2 HEPAs in series
	Fan	1	Fan is in operational stand-by

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance: WAC 246-247-075

<u>Federal and State Regulatory</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	Appendix B, Method 114(3)	All radionuclides which could contribute 10% of the potential EDE.	Continuous, collect samples biweekly at a minimum

Sampling Requirements: Active ventilation: continuous during operation.

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section

Change History

- 07/21/1997 Original NOC submitted on July 21, 1997 and was initially rejected (AIR 97-710) due to lack of information.
- 07/04/1998 1st revision of NOC was rejected on February 4, 1998 (AIR 98-202) due to lack of information.
- 12/16/1998 2nd revision approved on December 18, 1998 (AIR 98-1207).
- 03/11/1999 A telecon clarification approved on March 11, 1999 adjusted the Table 13-1, "Emissions Control Equipment Compliance For Portable Exhausters" regarding a delay in performance of the 168 performance test as required in accordance with 40 CFR 52, Appendix E Test Methods. US DOE NOC ID 717. No documentation on file.
- 07/31/1999 4th revision added two tanks and increased the Abated PTE from 6.51E-07 mrem/yr to 6.76E-07 mrem/yr. Approval on July 31, 1999 (no approval letter, see revision form of the same date). No changes to conditions. US DOE NOC ID 731.
- 08/27/1999 3rd revision added two tanks and required ALARACT demonstration and required documentation to prove that no increase emissions occurred as a result of saltwell pumping in these two tanks. Approval on August 27, 1999 (AIR 99-609). No changes to conditions.

Printed on 28-Oct-02

05/26/2000 5th revision clarified Section 6 per NOC Revision Form on June 25, 2000.

12/18/2000 5th revision added the last two paragraphs in the Project Description above. Revised Section 6.5 of the original NOC. Approval on December 18, 2000 (no approval letter, see revision form of the same date). No changes to conditions.

05/07/2002 NOC Revision Forms approved on May 1, 2002 and September 5, 2002. AOP Administrative Amendment approved on August 6, 2002 to correct typographical errors. Modified NOC received September 3, 2002. Changes from the revisions and modification resulted in addition of 296-P-33, 295-P-34, and 200 Area Diffuser/Fugitive Emission Units. Conditions and Limitations for revisions, modification and AOP Administrative Amendment mailed on October 28, 2002 via A/R 02-1020

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $4.51\text{E-}03$ mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to $9.03\text{E+}00$ mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 3) This process is limited to:
the use of portable exhausters on single shell tanks during saltwell pumping. Specific single shell tanks covered include: 241-A-101, 241-AX-101, 241-BY-105, 241-BY-106, 241-C-103, 241-S-101, 241-S-102, 241-S-103, 241-S-106, 241-S-107, 241-S-109, 241-S-111, 241-S-112, 241-T-104, 241-T-110, 241-U-102, 241-U-103, 241-U-105, 241-U-106, 241-U-107, 241-U-108, 241-U-109 and 241-U-111.

Saltwell pumping of drainable liquid waste includes the following activities:

- Initial planning including waste compatibility studies, criticality analysis, equipment specification, and tank material balance determinations;
- Installation of saltwell screen;
- Jet pump assembly installation;
- Transferring the liquid waste (via saltwell pumping);
- Occasionally, additions of limited amounts of water are made to prevent plugging of the saltwell screen and transfer line;
- Flushing and cleaning plugs from transfer lines.

INSTALLATION OF THE SALTWELL SCREEN

A saltwell screen is a mechanical device, approximately 11 inches in diameter, which normally extends from the top of the waste to within 2 inches of the tank bottom. The 400-mesh size holes in the screen allow liquid waste to pass through the screen (enter the pump cavity) while preventing solid waste from migrating to the jet pump.

Water lancing of the waste could be necessary to facilitate installation of the saltwell screen. Water lancing normally uses up to 1,895 liters of hot water at low pressure (1,034 kilopascals) to penetrate the crust on the waste and create a circular entry area large enough for the screen. Water lancing activities shall follow the requirements outline in ALARACT 10, TWRS ALARACT Demonstration for Water Lancing. The water lance is a long pipe, up to 7.62 centimeters in diameter with a nozzle at the end that

is lowered into the tank, through a riser, via a mobile crane attached to a truck. A hose from a portable water tank is connected to the other end of the water lance. The flushing water to the water lance shall be turned on just before the lance reaches the waste surface to minimize water additions to the tank. The water lance withdrawal steps are essentially the reverse of the insertion sequence. The use of this water lance requires that the lance be raised and lowered into the waste multiple times so that a large enough hole can be formed in the waste to accommodate the screen. Alternately, a newer water lance design to accomplish the same task could be used. The new lance has an 28-centimeter diameter and multiple nozzles on the bottom to facilitate waste penetration, and is designed to create a hole in the waste large enough to accommodate the saltwell screen with one insertion of the lance into the waste. This design requires less water volume and operates at a pressure limited to (20,685 kilopascals). During removal of a lance from a tank, portable water wands are used to wash waste residue from the outside of the water lance until radiation readings are within specified limits. The water lance is placed in a protective bag during the removal process.

The saltwell screen is connected to a source of flushing water by a hose at the top of the screen. The screen is rigged for lifting by a mobile crane. The saltwell screen assembly is lowered slowly into the pit and riser until the screen flange rests on the riser opening. The riser is capped until jet pump assembly is scheduled for installation.

The entire operation of installing a saltwell screen, including water lancing, generally takes less than eight hours. Radionuclide control is maintained mechanically by use of a spray ring that rests on top of the riser and allows the water lance to telescope through the ring. Although there is no physical contact between the lance outside diameter and the spray ring inside diameter, control of radionuclides is achieved by spraying water over this interface as the lance is lowered, which also helps to minimize the potential for sparking as well as controlling radionuclides. Additional radionuclide control is achieved by limiting the lowering of the lance to a maximum speed of approximately 1 foot per second. Also, this operation is performed in accordance with formal procedures and radiation surveys during the actual work activity to ensure containment of radionuclides. Pre-job and post-job surveys are performed to verify containment. The actual water lancing time usually takes approximately 30 minutes to 2 hours.

In tanks with passive ventilation water lancing activities shall not exceed 72 hours of actual water lancing.

JET PUMP INSTALLATION

Water lancing of the salt screen and waste inside the saltwell screen might be necessary to facilitate jet pump assembly installation within the screen. If water lancing is required, this shall be performed as described above. Following preoperational checks of the complete jet pump assembly, the pump assembly will be raised to a vertical position by a mobile crane and slowly lowered into the saltwell screen until the pump support plate rests on top of the saltwell screen flange. Jet pump installation activities shall follow the requirements of ALARACT 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment. A small amount of water is passed through the dip tubes while the pump is lowered into the screen to prevent plugging of the dip tubes. The dip tubes are half-inch carbon steel tubes used as instrumentation to monitor waste level and specific gravity. Small amounts of water are also passed through the dilution tube to prevent plugging. The dilution tube allows water to be added to the tank to prevent plugging of the screen. In some cases, instrumentation lines are installed as part of the saltwell pump assembly; in other cases, instrumentation lines are installed after the assembly is installed. The entire operation of installing a jet pump assembly generally takes less than four hours.

TRANSFERRING THE WASTE (SALTWELL PUMPING)

The discharge of the jet pump assembly shall be connected to the tank farm transfer system by use of a flexible jumper assembly located within the pit. The pump pits shall be equipped with leak detectors to help detect liquid waste leaks. If leaking is detected, pumping automatically is stopped. Occasionally water will be added to the tank via a pipe from an outside storage tank to prevent plugging of or to remove plugs from the saltwell screen and pump equipment. The water will be piped from a storage tank through a metering system and shall be at a rate of 280 liters per minute or less. Entry into the tank is made through the pump pit via an existing port on the pit cover and into the saltwell screen.

The concrete or steel cover block shall be reinstalled before starting the pumping operation. The cover contains penetrations for the various valve handles, electric cables, air, water, and sample lines. Following testing of the equipment, saltwell pumping begins and could continue for several months to several years depending on the initial volume of waste to be pumped and the rate liquid drains to the saltwell. Periodic surveillances and operational checks will occur during saltwell pumping. A portable exhaustor will be available for saltwell pumping if and when needed and will operate in the event that flammable gas levels exceed 25 percent of the LFL during the pumping campaign or used in conjunction with industrial health and hygiene practices for worker comfort and safety. The portable exhaustor shall be isolated from the tank by an isolation valve when the exhaustor is not in use.

FLUSHING AND CLEANING PLUGS FROM TRANSFER LINES

The waste transfer operations involve the pumping of liquid waste that contains dissolved solids. These solids can precipitate out of solution anywhere in the transfer path and cause blockage. If blockage is detected in the system, flushing the affected components with hot water will be necessary. Other techniques to free blockages could include pressurization, use of heat tracing, temporary jumpers, and hydraulic scouring. The hot water will be introduced to the system to be flushed through a pressure manifold by piping connected directly to the jet pump, or bypassing the jet pump and connected directly to a jumper or nozzle. All piping connections are designed to be leak tight and the pit cover block shall be installed before pressurization. If pressurization beyond that obtained from the tank farms water system or supply truck (i.e., approximately 1,034 kilopascals) is necessary to remove blockage, an engineering evaluation shall be performed to determine the maximum allowable pressure for operation. At a minimum, flushing will be performed when the system is shut down for any length of time and at the end of a saltwell pumping campaign.

Flushing of the transfer lines and/or plug removal will be performed in accordance with operating procedures and radiation surveys during the actual work activity to ensure containment of radionuclides. Pre-job and post-job surveys shall be performed to verify containment. This activity has been conducted previously without incident during and after waste transfers in actively and passively ventilated SSTs and actively ventilated DSTs. Flushing of transfer lines could be performed with or without an operating portable exhaustor.

SALT CAKE DISSOLUTION

At Tank 241-U-107, water additions may be made to the top of the salt cake to determine how much of the salt cake can be dissolved and removed during saltwell pumping. After the supernate is saltwell pumped from this tank, a low flow of water (approximately 7 to 16 liters per minute) is planned to be sprinkled on top of a portion of the salt cake's surface to enhance dissolution. The water application

system will consist of water supply tubing inserted through an existing riser and one or more low volume sprinklers that can apply water of varying temperatures. The water will be provided by the tank farm's water system or supply truck.

Application of dissolution water is expected to last for approximately three months. Dissolution data and video obtained at Tank 241-U-107 will be utilized for planning future salt cake dissolution efforts. Salt cake dissolution activities at Tank 241-U-107 could be conducted with or without an operating portable exhauster.

When a portable exhauster is required for saltwell pumping or the performance of supporting activities, the exhauster will draw warm moist air from the tank, heat and filter the air, and release the air to the environment. During active ventilation, fresh air, drawn into the tank vapor space through a breather filter, will dilute and disperse any flammable gases present. In the event a portable exhauster is installed at a tank but is not running and the tank is being pumped under passive ventilation, the portable exhauster shall be valved off and air shall enter or exit the tank through the breather filter, depending on the tank's internal pressure relative to atmospheric pressure. Each breather filter shall consist of a housing that contains a HEPA filter, an outlet screen, and a small seal loop. During passive ventilation, an isolation valve normally will be open to allow air flow between the tank vapor space and the outside atmosphere through the filter. Air flowing to and from the tank will pass horizontally through the filter and vertically through the downward-facing exit weather hood. Seal loops, installed in the exhaust lines, are designed as a safety feature to prevent a highly unlikely accident in which over pressurization occurs when the HEPA filter is isolated for occasional (infrequent) maintenance.

Air from the tank shall be heated to reduce the relative humidity before passing through the prefilter. The air shall pass through the prefilter, two HEPA filters in series, a fan and discharge through a stack. The stack shall contain a section that allows for the installation of air flow measuring and temporary sampling devices. Any moisture that might accumulate inside the exhauster shall be collected in a drain system, routed to a seal pot, and returned to the tank.

Flexible or rigid ductwork (depending on the design at each tank farm) shall be used to connect the exhauster inlet to the tank riser. Precautionary measures to protect the air pathway during connection of the ductwork to the tank riser shall include installation of an isolation valve in the riser to minimize the time tank contents are exposed to the air, and shall take into account abrasion, leakage, tear strength, tensile strength, air stream temperature, and outdoor exposure conditions.

The prefilter will increase the life of the HEPA filters by trapping the larger airborne particles allowing for a more economical operating system. As low as reasonably achievable (ALARA) concepts will be applied to allow less frequent change out of the HEPA filters, thereby reducing exposure of personnel to radiation sources.

The HEPA filters shall meet the requirements of ASME AG-1, Section I'C, and the requirements outline in the December 1998, Routine Technical Assistance Meeting and shall be tested annually to requirements of ASME N510, Section 10. The HEPA filters shall be nuclear grade throw-away extend-media dry-type in a rigid frame having a minimum particle collection efficiency of 99.95 percent for 0.3 micrometer median diameter, thermally-generated dioctylphthalate particles or other specified challenge aerosols. Pressure drop of a clean filter shall be a maximum of 1 inch water gauge at rated flow. The frame shall be corrosion resistant for the air stream design conditions. Each filter shall have a gelatinous seal gasket material that will be on the air inlet gasket surface.

The HEPA filter housing will provide a sealed barrier for the confinement of airborne radionuclides and will serve to encapsulate and hold the HEPA filter. The filter housing will provide for the attachment of pressure differential measurement components. Each filter housing will meet the applicable sections of ASME N509 and the test requirements of ASME N510. The filter housings shall be leak tested using the pressure decay method in accordance with ASME N510. Leakage shall not exceed 0.3 percent of the housing volume per hour.

The test sections shall provide a means for in place testing of the HEPA filters. Testing will confirm that any airborne radionuclide particles are captured to the level of efficiency of the installed HEPA filter. One test section shall be placed downstream of the prefilter section and upstream of the first HEPA filter section. The second test section shall be placed between the first stage HEPA filter housing and the second stage HEPA filter housing. For the 296-P-33 and 296-P-34 there is only one HEPA test section between the first stage HEPA and the second stage HEPA but the capability shall exist to individually test each HEPA filter.

The fan shall be a centrifugal type and be statically and dynamically balanced as an assembly. The exhaust stack houses the air velocity probe (for measurement of stack velocity) and the air sampling probe. Flexible ductwork will be used to connect the fan outlet to the stack.

4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Ac - 227	7.09E-02	Am - 241	6.55E+03	Am - 243	7.62E+01
Ba - 137 m	6.59E+06	C - 14	1.03E+03	Cd - 113 m	2.05E+03
Cm - 242	1.09E+01	Cm - 243	1.28E+00	Cm - 244	2.01E+01
Co - 60	1.60E+03	Cs - 134	8.15E+00	Cs - 137	0.96E+06
Eu - 152	1.27E+02	Eu - 154	1.49E+04	Eu - 155	1.02E+04
H - 3	4.02E+03	I - 129	1.34E+01	Nb - 93 m	4.98E+02
Ni - 59	1.51E+02	Ni - 63	1.40E+04	Np - 237	2.41E+01
Pa - 231	1.89E-01	Pu - 238	2.55E+02	Pu - 239	1.10E+04
Pu - 240	1.72E+03	Pu - 241	1.18E+04	Pu - 242	7.99E-02
Ra - 226	9.55E-03	Ra - 228	5.73E+00	Ru - 106	2.11E-03
Sb - 125	9.67E+02	Se - 79	1.37E+01	Sm - 151	4.50E+05
Sn - 123	8.14E+01	Sr - 90	5.90E+06	Tc - 99	6.31E+03
Th - 229	2.53E-01	Th - 232	4.42E-01	U - 232	5.77E+00
U - 233	2.96E+01	U - 234	4.02E+01	U - 235	1.48E+00
U - 236	1.21E+00	U - 238	3.77E+01	Y - 90	5.90E+06
Zr - 93	6.35E+02				

- 5) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 6) Portable exhausters will be available during transfer and used when flammable gases concentrations exceed 25 percent of the lower flammability limit (LFL) during salt-well pumping.
- 7) The facility must be able to demonstrate that the workers associated with this emission unit are adequately trained in the use and maintenance of emission control and monitoring systems, and in the performance of associated test and emergency response procedures (WAC 246-247-075(12)).
- 8) The facility must be able to demonstrate the reliability and accuracy of emission data and other test

- results from this emission unit (WAC 246-247-075(13)).
- 9) The department reserves the right to inspect and audit this unit during construction and operation, including all activities, equipment, operations, documents, data, and other records related to compliance with the regulations (WAC 246-247-080(1)).
- 10) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 11) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 12) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 13) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 14) All pre-operational activities described in the NOC must be satisfactorily completed prior to waste transfer.
- 15) The department retains the right to conduct its own stack sampling, environmental monitoring or other testing, as required around this unit to assure compliance. If the department so decides, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 16) All other commitments made in the NOC are considered requirements. Any deviation from those commitments must be approved by the department.
- 17) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 18) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 19) **This condition was obsoleted on 9/12/2002.** Periodic confirmatory sampling is required on passively ventilated tanks. It is outlined in the draft Air Operating Permit. It must consist of annual verification of smearable levels of activity on the inside surface of the ducting downstream of the HEPA filter or on the outside of the screen covering the outlet of the vent, if one exists.
Obsoleted as condition moved to 200 Area Diffuse and Fugitive Emission Unit.
- 20) All portable exhausters used in the salt-well pumping must meet the requirements specified in 40 CFR 61, Subpart H and associated requirements.
- 21) **This condition was obsoleted on 9/12/2002.** This approval, with its Conditions and Limitations, constitutes an amendment to the Department's Radioactive Air Emission License. This amendment must be included in the next revision of the Hanford Air Operating Permit (WAC 246-247-060(1)(c)).

and (2)(c)

Obsoleted by issuance of the Hanford Air Operating Permit (July 2001)

22) **This condition was obsoleted on 7/31/1999.** These Conditions and Limitations must be proceduralized prior to starting the activities described in the Notice of Construction. All activities are limited to these tanks: 241-AX-101, 241-BY-105, 241-BY-106, 241-S-101, 241-S-102, 241-S-103, 241-S-106, 241-S-107, 241-S-109, 241-S-111, 241-S-112, 241-U-103, 241-U-105, 241-U-106, 241-U-107, 241-U-108, 241-U-109, 241-U-111.

23) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)).
(WAC 246-247-080(6))

24) **This condition was obsoleted on 9/12/2002.** These Conditions and Limitations must be proceduralized prior to starting the activities described in the Notice of Construction. All activities are limited to these tanks: 241-AX-101, 241-BY-105, 241-BY-106, 241-S-101, 241-S-102, 241-S-103, 241-S-106, 241-S-107, 241-S-109, 241-S-111, 241-S-112, 241-U-103, 241-U-105, 241-U-106, 241-U-107, 241-U-108, 241-U-109, 241-U-111, 241-T-104, 241-T-110, 241-A-101 and 241-U-102.

Obsoleted as condition is included in the process description and is reflected in a standard condition via AIR 02-1020.

25) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).

26) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).

27) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).

28) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).

29) Prior to operation of the exhauster all exhaust duct connections shall be checked to ensure there is no air in-leakage. The duct shall be pressure tested in accordance with the requirements of AG-1 Section SA.

30) Monthly checks shall be performed on the exhaust duct to ensure there is no degradation of the ductwork or leakage at the connection points.

- a. Inspect pitot tube systems for leaks, at least annually.
 - b. Inspect nozzles for alignment, presence of deposits, damage to sharp-edged nozzles, or other potentially degrading factors (corrosion, physical damage, etc) at least annually.
 - c. Check transport lines and if visible deposits are presents perform cleaning, at least annually.
 - d. Checks to ensure the tightness of all fittings and connections as well as a leak test of the sample system, at least annually.
 - e. Inspect rotameters of sampling systems for presence of foreign matter at the start of each sampling period.
 - f. Check the response of stack flow rate monitoring and control system at least quarterly.
 - g. A functional/calibration check of monitoring system instrumentation shall be performed at least annually.
 - h. USDOE shall provide to WDOH for review and approval copies of the procedures used to perform the above activities.
- 32) HEPA filters shall be individually tested, annually, to the requirements of ASME N510, and shall have a minimum efficiency of 99.95%.
- 33) The following information will be tracked on a WDOH approved log:
- a. Single Shell Tank being saltwell pumped;
 - b. Exhauster being used;
 - c. Hours of operations.

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

**PROJECT TITLE: PORTABLE EXHAUSTER USE ON SINGLE SHELL (SST) TANKS DURING
SALTWELL PUMPING**

Date Approved: 25-Oct-02

Emission Unit Name: 296-P-33

Emission Unit ID 144

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(4)]
BARCT [WAC 246-247-040(3)]

Zone or Area:	Abatement Technology	Required # of Units	Additional Description/Conditions
	Heater	1	
	Prefilter	1	
	HEPA	2	
	Fan	1	1 flow path with 2 HEPA's each

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

Federal and State Regulatory	Monitoring and Testing Procedure	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4) & WAC 246-247-75(2)	Method 2 appendix A Method 114 appendix B 61.93(b)(2)(ii) ANSI N13.1	All radionuclides which could contribute 10% of the potential EDE.	Continuous

Sampling Requirements: Continuous

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

- 07/21/1997 Original NOC submitted on July 21, 1997 and was initially rejected (AIR 97-710) due to lack of information.
- 02/04/1998 1st revision of NOC was rejected on February 4, 1998 (AIR 98-202) due to lack of information.
- 12/16/1998 2nd revision approved on December 16, 1998 (AIR 98-1207).
- 03/11/1999 A telecon clarification approved on March 11, 1999 adjusted the Table 12-1, "Emissions Control Equipment Compliance For Portable Exhausters" regarding a delay in performance of the 158 performance test as required in accordance with 40 CFR 52, Appendix E Test Methods. US DOE NOC ID 717. No documentation on file.
- 07/31/1999 4th revision added two tanks and increased the Abated PTE from 6.51E-07 mrem/yr to 6.76E-07 mrem/yr. Approval on July 31, 1999 (no approval letter, see revision form of the same date). No changes to conditions. US DOE NOC ID 761.
- 08/27/1999 3rd revision added two tanks and required ALARACT demonstration and required documentation to prove that no increase emissions occurred as a result of saltwell pumping in these two tanks. Approval on August 27, 1999 (AIR 99-809). No changes to conditions.

Printed on 28-Oct-02

06/26/2000 5th revision clarified Section 6 per NDC Revision Form on June 26, 2000.

12/18/2000 6th revision added the last two paragraphs in the Project Description above. Revised Section 6.5 of the original NDC. Approval on December 18, 2000 (no approval letter, see revision form of the same date). No changes to conditions.

05/07/2002 NDC Revision Forms approved on May 1, 2002 and September 5, 2002. AOP Administrative Amendment approved on August 6, 2002 to correct typographical errors. Modified NDC received September 3, 2002. Changes from the revisions and modification resulted in addition of 296-P-33, 296-P-34, and 200 Area Diffuse/Fugitive Emission Units. Conditions and Limitations for revisions, modification and AOP Administrative Amendment mailed on October 28, 2002 via AIR 02-1020.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $4.51\text{E-}03$ mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to $9.03\text{E+}00$ mrem/year to the Maximally Exposed Individual (WAC 246-247-030(21)).
- 3) **This process is limited to:**
the use of portable exhausters on single shell tanks during saltwell pumping. Specific single shell tanks covered include: 241-A-101, 241-AX-101, 241-BY-105, 241-BY-106, 241-C-103, 241-S-101, 241-S-102, 241-S-103, 241-S-106, 241-S-107, 241-S-109, 241-S-111, 241-S-112, 241-T-104, 241-T-110, 241-U-102, 241-U-103, 241-U-105, 241-U-106, 241-U-107, 241-U-108, 241-U-109 and 241-U-111.

Saltwell pumping of drainable liquid waste includes the following activities:

- Initial planning including waste compatibility studies, criticality analysis, equipment specification, and tank material balance determinations;
- Installation of saltwell screen;
- Jet pump assembly installation;
- Transferring the liquid waste (via saltwell pumping);
- Occasionally, additions of limited amounts of water are made to prevent plugging of the saltwell screen and transfer line;
- Flushing and cleaning plugs from transfer lines.

INSTALLATION OF THE SALTWELL SCREEN

A saltwell screen is a mechanical device, approximately 11 inches in diameter, which normally extends from the top of the waste to within 2 inches of the tank bottom. The 400-mesh size holes in the screen allow liquid waste to pass through the screen (enter the pump cavity) while preventing solid waste from migrating to the jet pump.

Water lancing of the waste could be necessary to facilitate installation of the saltwell screen. Water lancing normally uses up to 1,895 liters of hot water at low pressure (1,034 kilopascals) to penetrate the crust on the waste and create a circular entry area large enough for the screen. Water lancing activities shall follow the requirements outline in ALARACT 10, TWRS ALARACT Demonstration for Water Lancing. The water lance is a long pipe, up to 7.62 centimeters in diameter with a nozzle at the end that

is lowered into the tank, through a riser, via a mobile crane attached to a truck. A hose from a portable water tank is connected to the other end of the water lance. The flushing water to the water lance shall be turned on just before the lance reaches the waste surface to minimize water additions to the tank. The water lance withdrawal steps are essentially the reverse of the insertion sequence. The use of this water lance requires that the lance be raised and lowered into the waste multiple times so that a large enough hole can be formed in the waste to accommodate the screen. Alternately, a newer water lance design to accomplish the same task could be used. The new lance has an 28-centimeter diameter and multiple nozzles on the bottom to facilitate waste penetration, and is designed to create a hole in the waste large enough to accommodate the saltwell screen with one insertion of the lance into the waste. This design requires less water volume and operates at a pressure limited to (20,685 kilopascals). During removal of a lance from a tank, portable water wands are used to wash waste residue from the outside of the water lance until radiation readings are within specified limits. The water lance is placed in a protective bag during the removal process.

The saltwell screen is connected to a source of flushing water by a hose at the top of the screen. The screen is rigged for lifting by a mobile crane. The saltwell screen assembly is lowered slowly into the pit and riser until the screen flange rests on the riser opening. The riser is capped until jet pump assembly is scheduled for installation.

The entire operation of installing a saltwell screen, including water lancing, generally takes less than eight hours. Radionuclide control is maintained mechanically by use of a spray ring that rests on top of the riser and allows the water lance to telescope through the ring. Although there is no physical contact between the lance outside diameter and the spray ring inside diameter, control of radionuclides is achieved by spraying water over this interface as the lance is lowered, which also helps to minimize the potential for sparking as well as controlling radionuclides. Additional radionuclide control is achieved by limiting the lowering of the lance to a maximum speed of approximately 1 foot per second. Also, this operation is performed in accordance with formal procedures and radiation surveys during the actual work activity to ensure containment of radionuclides. Pre-job and post-job surveys are performed to verify containment. The actual water lancing time usually takes approximately 30 minutes to 2 hours.

In tanks with passive ventilation water lancing activities shall not exceed 72 hours of actual water lancing.

JET PUMP INSTALLATION

Water lancing of the salt screen and waste inside the saltwell screen might be necessary to facilitate jet pump assembly installation within the screen. If water lancing is required, this shall be performed as described above. Following preoperational checks of the complete jet pump assembly, the pump assembly will be raised to a vertical position by a mobile crane and slowly lowered into the saltwell screen until the pump support plate rests on top of the saltwell screen flange. Jet pump installation activities shall follow the requirements of ALARACT 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment. A small amount of water is passed through the dip tubes while the pump is lowered into the screen to prevent plugging of the dip tubes. The dip tubes are half-inch carbon steel tubes used as instrumentation to monitor waste level and specific gravity. Small amounts of water are also passed through the dilution tube to prevent plugging. The dilution tube allows water to be added to the tank to prevent plugging of the screen. In some cases, instrumentation lines are installed as part of the saltwell pump assembly; in other cases, instrumentation lines are installed after the assembly is installed. The entire operation of installing a jet pump assembly generally takes less than four hours.

TRANSFERRING THE WASTE (SALTWELL PUMPING)

The discharge of the jet pump assembly shall be connected to the tank farm transfer system by use of a flexible jumper assembly located within the pit. The pump pits shall be equipped with leak detectors to help detect liquid waste leaks. If leaking is detected, pumping automatically is stopped. Occasionally water will be added to the tank via a pipe from an outside storage tank to prevent plugging of or to remove plugs from the saltwell screen and pump equipment. The water will be piped from a storage tank through a metering system and shall be at a rate of 280 liters per minute or less. Entry into the tank is made through the pump pit via an existing port on the pit cover and into the saltwell screen.

The concrete or steel cover block shall be reinstalled before starting the pumping operation. The cover contains penetrations for the various valve handles, electric cables, air, water, and sample lines. Following testing of the equipment, saltwell pumping begins and could continue for several months to several years depending on the initial volume of waste to be pumped and the rate liquid drains to the saltwell. Periodic surveillances and operational checks will occur during saltwell pumping. A portable exhaustor will be available for saltwell pumping if and when needed and will operate in the event that flammable gas levels exceed 25 percent of the LFL during the pumping campaign or used in conjunction with industrial health and hygiene practices for worker comfort and safety. The portable exhaustor shall be isolated from the tank by an isolation valve when the exhaustor is not in use.

FLUSHING AND CLEANING PLUGS FROM TRANSFER LINES

The waste transfer operations involve the pumping of liquid waste that contains dissolved solids. These solids can precipitate out of solution anywhere in the transfer path and cause blockage. If blockage is detected in the system, flushing the affected components with hot water will be necessary. Other techniques to free blockages could include pressurization, use of heat tracing, temporary jumpers, and hydraulic scouring. The hot water will be introduced to the system to be flushed through a pressure manifold by piping connected directly to the jet pump, or bypassing the jet pump and connected directly to a jumper or nozzle. All piping connections are designed to be leak tight and the pit cover block shall be installed before pressurization. If pressurization beyond that obtained from the tank farms water system or supply truck (i.e., approximately 1,034 kilopascals) is necessary to remove blockage, an engineering evaluation shall be performed to determine the maximum allowable pressure for operation. At a minimum, flushing will be performed when the system is shut down for any length of time and at the end of a saltwell pumping campaign.

Flushing of the transfer lines and/or plug removal will be performed in accordance with operating procedures and radiation surveys during the actual work activity to ensure containment of radionuclides. Pre-job and post-job surveys shall be performed to verify containment. This activity has been conducted previously without incident during and after waste transfers in actively and passively ventilated SSTs and actively ventilated DSTs. Flushing of transfer lines could be performed with or without an operating portable exhaustor.

SALT CAKE DISSOLUTION

At Tank 241-U-107, water additions may be made to the top of the salt cake to determine how much of the salt cake can be dissolved and removed during saltwell pumping. After the supernate is saltwell pumped from this tank, a low flow of water (approximately 7 to 16 liters per minute) is planned to be sprinkled on top of a portion of the salt cake's surface to enhance dissolution. The water application

system will consist of water supply tubing inserted through an existing riser and one or more low volume sprinklers that can apply water of varying temperatures. The water will be provided by the tank farm's water system or supply truck.

Application of dissolution water is expected to last for approximately three months. Dissolution data and video obtained at Tank 241-U-107 will be utilized for planning future salt cake dissolution efforts. Salt cake dissolution activities at Tank 241-U-107 could be conducted with or without an operating portable exhauster.

When a portable exhauster is required for saltwell pumping or the performance of supporting activities, the exhauster will draw warm moist air from the tank, heat and filter the air, and release the air to the environment. During active ventilation, fresh air, drawn into the tank vapor space through a breather filter, will dilute and disperse any flammable gases present. In the event a portable exhauster is installed at a tank but is not running and the tank is being pumped under passive ventilation, the portable exhauster shall be valved off and air shall enter or exit the tank through the breather filter, depending on the tank's internal pressure relative to atmospheric pressure. Each breather filter shall consist of a housing that contains a HEPA filter, an outlet screen, and a small seal loop. During passive ventilation, an isolation valve normally will be open to allow air flow between the tank vapor space and the outside atmosphere through the filter. Air flowing to and from the tank will pass horizontally through the filter and vertically through the downward-facing exit weather hood. Seal loops, installed in the exhaust lines, are designed as a safety feature to prevent a highly unlikely accident in which over pressurization occurs when the HEPA filter is isolated for occasional (infrequent) maintenance.

Air from the tank shall be heated to reduce the relative humidity before passing through the prefilter. The air shall pass through the prefilter, two HEPA filters in series, a fan and discharge through a stack. The stack shall contain a section that allows for the installation of air flow measuring and temporary sampling devices. Any moisture that might accumulate inside the exhauster shall be collected in a drain system, routed to a seal pot, and returned to the tank.

Flexible or rigid ductwork (depending on the design at each tank farm) shall be used to connect the exhauster inlet to the tank riser. Precautionary measures to protect the air pathway during connection of the ductwork to the tank riser shall include installation of an isolation valve in the riser to minimize the time tank contents are exposed to the air, and shall take into account abrasion, leakage, tear strength, tensile strength, air stream temperature, and outdoor exposure conditions.

The prefilter will increase the life of the HEPA filters by trapping the larger airborne particles allowing for a more economical operating system. As low as reasonably achievable (ALARA) concepts will be applied to allow less frequent change out of the HEPA filters, thereby reducing exposure of personnel to radiation sources.

The HEPA filters shall meet the requirements of ASME AG-1, Section FC, and the requirements outline in the December 1998, Routine Technical Assistance Meeting and shall be tested annually to requirements of ASME N510, Section 10. The HEPA filters shall be nuclear grade throw-away extend-media dry-type in a rigid frame having a minimum particle collection efficiency of 99.95 percent for 0.3 micrometer median diameter, thermally-generated dioctylphthalate particles or other specified challenge aerosols. Pressure drop of a clean filter shall be a maximum of 1 inch water gauge at rated flow. The frame shall be corrosion resistant for the air stream design conditions. Each filter shall have a gelatinous seal gasket material that will be on the air inlet gasket surface.

The HEPA filter housing will provide a sealed barrier for the confinement of airborne radionuclides and will serve to encapsulate and hold the HEPA filter. The filter housing will provide for the attachment of pressure differential measurement components. Each filter housing will meet the applicable sections of ASME N509 and the test requirements of ASME N510. The filter housings shall be leak tested using the pressure decay method in accordance with ASME N510. Leakage shall not exceed 0.3 percent of the housing volume per hour.

The test sections shall provide a means for in place testing of the HEPA filters. Testing will confirm that any airborne radionuclide particles are captured to the level of efficiency of the installed HEPA filter. One test section shall be placed downstream of the prefilter section and upstream of the first HEPA filter section. The second test section shall be placed between the first stage HEPA filter housing and the second stage HEPA filter housing. For the 296-P-33 and 296-P-34 there is only one HEPA test section between the first stage HEPA and the second stage HEPA but the capability shall exist to individually test each HEPA filter.

The fan shall be a centrifugal type and be statically and dynamically balanced as an assembly. The exhaust stack houses the air velocity probe (for measurement of stack velocity) and the air sampling probe. Flexible ductwork will be used to connect the fan outlet to the stack.

4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Ac - 227	7.09E-02	Am - 241	6.55E+03	Am - 243	7.62E+01
Ba - 137 m	6.59E+06	C - 14	1.03E+03	Cd - 113 m	2.05E+03
Cm - 242	1.09E+01	Cm - 243	1.28E+00	Cm - 244	2.01E+01
Co - 60	1.60E+03	Cs - 134	8.15E+00	Cs - 137	6.96E+06
Eu - 152	1.27E+02	Eu - 154	1.49E+04	Eu - 155	1.02E+04
H - 3	4.02E+03	I - 129	1.34E+01	Nb - 93 m	4.98E+02
Ni - 59	1.51E+02	Ni - 63	1.40E+04	Np - 237	2.41E+01
Pa - 231	1.89E-01	Pu - 238	2.55E+02	Pu - 239	1.10E+04
Pu - 240	1.72E+03	Pu - 241	1.18E+04	Pu - 242	7.99E-02
Ra - 226	9.55E-03	Ra - 228	5.73E+00	Ru - 106	2.11E-03
Sb - 125	9.67E+02	Se - 79	1.37E+01	Sm - 151	4.50E+05
Sn - 123	8.14E+01	Sr - 90	5.90E+06	Tc - 99	6.31E+03
Th - 229	2.53E-01	Th - 232	4.42E-01	U - 232	5.77E+00
U - 233	2.96E+01	U - 234	4.02E+01	U - 235	1.48E+00
U - 236	1.21E+00	U - 238	3.77E+01	Y - 90	5.90E+06
Zr - 93	6.35E+02				

- 5) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 6) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 7) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 8) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).

- 9) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 10) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 11) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 12) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 13) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 14) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 15) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 16) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 17) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(5))

- 18) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 19) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or

- requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 20) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).
- 21) Prior to operation of the exhauster all exhaust duct connections shall be checked to ensure there is no air in-leakage. The duct shall be pressure tested in accordance with the requirements of AG-1 Section SA.
- 22) Monthly checks shall be performed on the exhaust duct to ensure there is no deterioration of the ductwork or leakage at the connection points.
- 23) HEPA filters shall be individually tested, annually, to the requirements of ASME N510, and shall have a minimum efficiency of 99.95%.
- 24) Within one year of initial use of the exhauster the emission unit monitoring system shall have the following activities performed:
- a. Inspect pitot tube systems for leaks, at least annually.
 - b. Inspect nozzles for alignment, presence of deposits, damage to sharp-edged nozzles, or other potentially degrading factors (corrosion, physical damage, etc) at least annually.
 - c. Check transport lines and if visible deposits are presents perform cleaning, at least annually.
 - d. Checks to ensure the tightness of all fittings and connections as well as a leak test of the sample system, at least annually.
 - e. Inspect rotameters of sampling systems for presence of foreign matter at the start of each sampling period.
 - f. Check the response of stack flow rate monitoring and control system at least quarterly.
 - g. A functional/calibration check of monitoring system instrumentation shall be performed at least annually.
 - h. USDOE shall provide to WDOH for review and approval copies of the procedures used to perform the above activities.
- 25) The following information will be tracked on a WDOH approved log:
- a. Single Shell Tank being saltwell pumped;
 - b. Exhauster being used;
 - c. **Hours of operations.**

DEPARTMENT OF HEALTH
RADIOACTIVE AIR EMISSIONS
NOTICE OF CONSTRUCTION
APPROVAL FOR

PROJECT TITLE: PORTABLE EXHAUSTER USE ON SINGLE SHELL (SST) TANKS DURING
SALTWELL PUMPING

Date Approved: 25-Oct-02

Emission Unit Name: 296-P-34

Emission Unit ID 253

This is a MAJOR, ACTIVELY ventilated emission unit.

This emission unit requires the following Abatement Technology:

Applicable Requirements: BARCT

ALARACT [WAC 246-247-040(1)]
BARCT [WAC 246-247-040(3)]

<u>Zone or Area:</u>	<u>Abatement Technology</u>	<u>Required # of Units</u>	<u>Additional Description/Conditions</u>
	Heater	1	
	Prefilter	1	
	HEPA	2	
	Fan	1	1 flow path with 2 HEPA's

Additional abatement technologies required by this Notice of Construction will be listed in the Conditions and Limitations section.

This emission unit has the following Monitoring and Sampling Requirements:

Applicable Requirements: Monitoring, Testing and Quality Assurance WAC 246-247-075

<u>Federal and State Regulatory</u>	<u>Monitoring and Testing Procedure</u>	<u>Radionuclides Requiring Measurement</u>	<u>Sampling Frequency</u>
40 CFR 61.93(b)(4) & WAC 246-247-75(2)	Method 2 appendix A Method 114 appendix B 61.93(b)(2)(ii) ANSI N13.1	All radionuclides which could contribute 10% of the potential EDE.	Continuous

Sampling Requirements: Continuous

Additional monitoring or sampling requirements established by this NOC will be listed in the Conditions and Limitations section.

Change History

07/21/1997 Original NOC submitted on July 21, 1997 and was initially rejected (AIR 97-710) due to lack of information.

02/04/1998 1st revision of NOC was rejected on February 4, 1998 (AIR 98-202) due to lack of information.

12/16/1998 2nd revision approved on December 16, 1998 (AIR 98-1207).

03/11/1999 A telecom clarification approved on March 11, 1999 adjusted the Table 13-1, "Emissions Control Equipment Compliance For Portable Exhausters" regarding a delay in performance of the 158 performance test as required in accordance with 40 CFR 62, Appendix E Test Methods. US DOE NOC ID 717. No documentation on file.

07/31/1999 4th revision added two tanks and increased the Abated PTE from 6.51E-07 micro/yr to 6.76E-07 micro/yr. Approval on July 31, 1999 (no approval letter, see revision form of the same date). No changes to conditions. US DOE NOC ID 761.

08/27/1999 3rd revision added two tanks and required ALARACT demonstration and required documentation to prove that no increase emissions occurred as a result of salt-well pumping in these two tanks. Approval on August 27, 1999 (AIR 99-005). No changes to conditions.

06/26/2000 5th revision clarified Section 6 per NOC Revision Form on June 26, 2000.

12/18/2000 6th revision added the last two paragraphs in the Project Description above. Revised Section 6.5 of the original NOC. Approval on December 18, 2000 (no approval letter, see revision form of the same date). No changes to conditions.

05/07/2002 NOC Revision Forms approved on May 1, 2002 and September 5, 2002. AOP Administrative Amendment approved on August 6, 2002 to correct typographical errors. Modified NOC received September 3, 2002. Changes from the revisions and modification resulted in addition of 295-P-33, 296-P-34, and 200 Area Diffuse/Fugitive Emission Units. Conditions and Limitations for revisions, modification and AOP Administrative Amendment mailed on October 28, 2002 via AIR 02-1020.

CONDITIONS AND LIMITATIONS

- 1) The U.S. Department of Energy shall comply with all Conditions and Limitations of this license (WAC 246-247-060(5)).
- 2) The total abated emission limit for this Notice of Construction is limited to $4.51\text{E-}03$ mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)). The total limit on the Potential-To-Emit for this Notice of Construction is limited to $9.03\text{E+}00$ mrem/year to the Maximally Exposed Individual (WAC 246-247-030(2)).
- 3) This process is limited to:
the use of portable exhausters on single shell tanks during saltwell pumping. Specific single shell tanks covered include: 241-A-101, 241-AX-101, 241-BY-105, 241-BY-106, 241-C-103, 241-S-101, 241-S-102, 241-S-103, 241-S-106, 241-S-107, 241-S-109, 241-S-111, 241-S-112, 241-T-104, 241-T-110, 241-U-102, 241-U-103, 241-U-105, 241-U-106, 241-U-107, 241-U-108, 241-U-109 and 241-U-111.

Saltwell pumping of drainable liquid waste includes the following activities:

- Initial planning including waste compatibility studies, criticality analysis, equipment specification, and tank material balance determinations;
- Installation of saltwell screen;
- Jet pump assembly installation;
- Transferring the liquid waste (via saltwell pumping);
- Occasionally, additions of limited amounts of water are made to prevent plugging of the saltwell screen and transfer line;
- Flushing and cleaning plugs from transfer lines.

INSTALLATION OF THE SALTWELL SCREEN

A saltwell screen is a mechanical device, approximately 11 inches in diameter, which normally extends from the top of the waste to within 2 inches of the tank bottom. The 400-mesh size holes in the screen allow liquid waste to pass through the screen (enter the pump cavity) while preventing solid waste from migrating to the jet pump.

Water lancing of the waste could be necessary to facilitate installation of the saltwell screen. Water lancing normally uses up to 1,895 liters of hot water at low pressure (1,034 kilopascals) to penetrate the crust on the waste and create a circular entry area large enough for the screen. Water lancing activities shall follow the requirements outline in ALARACT 10, TWRS ALARACT Demonstration for Water Lancing. The water lance is a long pipe, up to 7.62 centimeters in diameter with a nozzle at the end that

is lowered into the tank, through a riser, via a mobile crane attached to a truck. A hose from a portable water tank is connected to the other end of the water lance. The flushing water to the water lance shall be turned on just before the lance reaches the waste surface to minimize water additions to the tank. The water lance withdrawal steps are essentially the reverse of the insertion sequence. The use of this water lance requires that the lance be raised and lowered into the waste multiple times so that a large enough hole can be formed in the waste to accommodate the screen. Alternately, a newer water lance design to accomplish the same task could be used. The new lance has an 28-centimeter diameter and multiple nozzles on the bottom to facilitate waste penetration, and is designed to create a hole in the waste large enough to accommodate the saltwell screen with one insertion of the lance into the waste. This design requires less water volume and operates at a pressure limited to (20,685 kilopascals). During removal of a lance from a tank, portable water wands are used to wash waste residue from the outside of the water lance until radiation readings are within specified limits. The water lance is placed in a protective bag during the removal process.

The saltwell screen is connected to a source of flushing water by a hose at the top of the screen. The screen is rigged for lifting by a mobile crane. The saltwell screen assembly is lowered slowly into the pit and riser until the screen flange rests on the riser opening. The riser is capped until jet pump assembly is scheduled for installation.

The entire operation of installing a saltwell screen, including water lancing, generally takes less than eight hours. Radionuclide control is maintained mechanically by use of a spray ring that rests on top of the riser and allows the water lance to telescope through the ring. Although there is no physical contact between the lance outside diameter and the spray ring inside diameter, control of radionuclides is achieved by spraying water over this interface as the lance is lowered, which also helps to minimize the potential for sparking as well as controlling radionuclides. Additional radionuclide control is achieved by limiting the lowering of the lance to a maximum speed of approximately 1 foot per second. Also, this operation is performed in accordance with formal procedures and radiation surveys during the actual work activity to ensure containment of radionuclides. Pre-job and post-job surveys are performed to verify containment. The actual water lancing time usually takes approximately 30 minutes to 2 hours.

In tanks with passive ventilation water lancing activities shall not exceed 72 hours of actual water lancing.

JET PUMP INSTALLATION

Water lancing of the salt screen and waste inside the saltwell screen might be necessary to facilitate jet pump assembly installation within the screen. If water lancing is required, this shall be performed as described above. Following preoperational checks of the complete jet pump assembly, the pump assembly will be raised to a vertical position by a mobile crane and slowly lowered into the saltwell screen until the pump support plate rests on top of the saltwell screen flange. Jet pump installation activities shall follow the requirements of ALARACT 13, TWRS ALARACT Demonstration for Installation, Operation, and Removal of Tank Equipment. A small amount of water is passed through the dip tubes while the pump is lowered into the screen to prevent plugging of the dip tubes. The dip tubes are half-inch carbon steel tubes used as instrumentation to monitor waste level and specific gravity. Small amounts of water are also passed through the dilution tube to prevent plugging. The dilution tube allows water to be added to the tank to prevent plugging of the screen. In some cases, instrumentation lines are installed as part of the saltwell pump assembly; in other cases, instrumentation lines are installed after the assembly is installed. The entire operation of installing a jet pump assembly generally takes less than four hours.

TRANSFERRING THE WASTE (SALTWELL PUMPING)

The discharge of the jet pump assembly shall be connected to the tank farm transfer system by use of a flexible jumper assembly located within the pit. The pump pits shall be equipped with leak detectors to help detect liquid waste leaks. If leaking is detected, pumping automatically is stopped. Occasionally water will be added to the tank via a pipe from an outside storage tank to prevent plugging of or to remove plugs from the saltwell screen and pump equipment. The water will be piped from a storage tank through a metering system and shall be at a rate of 280 liters per minute or less. Entry into the tank is made through the pump pit via an existing port on the pit cover and into the saltwell screen.

The concrete or steel cover block shall be reinstalled before starting the pumping operation. The cover contains penetrations for the various valve handles, electric cables, air, water, and sample lines. Following testing of the equipment, saltwell pumping begins and could continue for several months to several years depending on the initial volume of waste to be pumped and the rate liquid drains to the saltwell. Periodic surveillances and operational checks will occur during saltwell pumping. A portable exhaustor will be available for saltwell pumping if and when needed and will operate in the event that flammable gas levels exceed 25 percent of the LFL during the pumping campaign or used in conjunction with industrial health and hygiene practices for worker comfort and safety. The portable exhaustor shall be isolated from the tank by an isolation valve when the exhaustor is not in use.

FLUSHING AND CLEANING PLUGS FROM TRANSFER LINES

The waste transfer operations involve the pumping of liquid waste that contains dissolved solids. These solids can precipitate out of solution anywhere in the transfer path and cause blockage. If blockage is detected in the system, flushing the affected components with hot water will be necessary. Other techniques to free blockages could include pressurization, use of heat tracing, temporary jumpers, and hydraulic scouring. The hot water will be introduced to the system to be flushed through a pressure manifold by piping connected directly to the jet pump, or bypassing the jet pump and connected directly to a jumper or nozzle. All piping connections are designed to be leak tight and the pit cover block shall be installed before pressurization. If pressurization beyond that obtained from the tank farms water system or supply truck (i.e., approximately 1,034 kilopascals) is necessary to remove blockage, an engineering evaluation shall be performed to determine the maximum allowable pressure for operation. At a minimum, flushing will be performed when the system is shut down for any length of time and at the end of a saltwell pumping campaign.

Flushing of the transfer lines and/or plug removal will be performed in accordance with operating procedures and radiation surveys during the actual work activity to ensure containment of radionuclides. Pre-job and post-job surveys shall be performed to verify containment. This activity has been conducted previously without incident during and after waste transfers in actively and passively ventilated SSTs and actively ventilated DSTs. Flushing of transfer lines could be performed with or without an operating portable exhaustor.

SALT CAKE DISSOLUTION

At Tank 241-U-107, water additions may be made to the top of the salt cake to determine how much of the salt cake can be dissolved and removed during saltwell pumping. After the supernate is saltwell pumped from this tank, a low flow of water (approximately 7 to 16 liters per minute) is planned to be sprinkled on top of a portion of the salt cake's surface to enhance dissolution. The water application

system will consist of water supply tubing inserted through an existing riser and one or more low volume sprinklers that can apply water of varying temperatures. The water will be provided by the tank farm's water system or supply truck.

Application of dissolution water is expected to last for approximately three months. Dissolution data and video obtained at Tank 241-U-107 will be utilized for planning future salt cake dissolution efforts. Salt cake dissolution activities at Tank 241-U-107 could be conducted with or without an operating portable exhauster.

When a portable exhauster is required for saltwell pumping or the performance of supporting activities, the exhauster will draw warm moist air from the tank, heat and filter the air, and release the air to the environment. During active ventilation, fresh air, drawn into the tank vapor space through a breather filter, will dilute and disperse any flammable gases present. In the event a portable exhauster is installed at a tank but is not running and the tank is being pumped under passive ventilation, the portable exhauster shall be valved off and air shall enter or exit the tank through the breather filter, depending on the tank's internal pressure relative to atmospheric pressure. Each breather filter shall consist of a housing that contains a HEPA filter, an outlet screen, and a small seal loop. During passive ventilation, an isolation valve normally will be open to allow air flow between the tank vapor space and the outside atmosphere through the filter. Air flowing to and from the tank will pass horizontally through the filter and vertically through the downward-facing exit weather hood. Seal loops, installed in the exhaust lines, are designed as a safety feature to prevent a highly unlikely accident in which over pressurization occurs when the HEPA filter is isolated for occasional (infrequent) maintenance.

Air from the tank shall be heated to reduce the relative humidity before passing through the prefilter. The air shall pass through the prefilter, two HEPA filters in series, a fan and discharge through a stack. The stack shall contain a section that allows for the installation of air flow measuring and temporary sampling devices. Any moisture that might accumulate inside the exhauster shall be collected in a drain system, routed to a seal pot, and returned to the tank.

Flexible or rigid ductwork (depending on the design at each tank farm) shall be used to connect the exhauster inlet to the tank riser. Precautionary measures to protect the air pathway during connection of the ductwork to the tank riser shall include installation of an isolation valve in the riser to minimize the time tank contents are exposed to the air, and shall take into account abrasion, leakage, tear strength, tensile strength, air stream temperature, and outdoor exposure conditions.

The prefilter will increase the life of the HEPA filters by trapping the larger airborne particles allowing for a more economical operating system. As low as reasonably achievable (ALARA) concepts will be applied to allow less frequent change out of the HEPA filters, thereby reducing exposure of personnel to radiation sources.

The HEPA filters shall meet the requirements of ASME AG-1, Section FC, and the requirements outline in the December 1998, Routine Technical Assistance Meeting and shall be tested annually to requirements of ASME N510, Section 10. The HEPA filters shall be nuclear grade throw-away extend-media dry-type in a rigid frame having a minimum particle collection efficiency of 99.95 percent for 0.3 micrometer median diameter, thermally-generated dioctylphthalate particles or other specified challenge aerosols. Pressure drop of a clean filter shall be a maximum of 1 inch water gauge at rated flow. The frame shall be corrosion resistant for the air stream design conditions. Each filter shall have a gelatinous seal gasket material that will be on the air inlet gasket surface.

The HEPA filter housing will provide a sealed barrier for the confinement of airborne radionuclides and will serve to encapsulate and hold the HEPA filter. The filter housing will provide for the attachment of pressure differential measurement components. Each filter housing will meet the applicable sections of ASME N509 and the test requirements of ASME N510. The filter housings shall be leak tested using the pressure decay method in accordance with ASME N510. Leakage shall not exceed 0.3 percent of the housing volume per hour.

The test sections shall provide a means for in place testing of the HEPA filters. Testing will confirm that any airborne radionuclide particles are captured to the level of efficiency of the installed HEPA filter. One test section shall be placed downstream of the prefilter section and upstream of the first HEPA filter section. The second test section shall be placed between the first stage HEPA filter housing and the second stage HEPA filter housing. For the 296-P-33 and 296-P-34 there is only one HEPA test section between the first stage HEPA and the second stage HEPA but the capability shall exist to individually test each HEPA filter.

The fan shall be a centrifugal type and be statically and dynamically balanced as an assembly. The exhaust stack houses the air velocity probe (for measurement of stack velocity) and the air sampling probe. Flexible ductwork will be used to connect the fan outlet to the stack.

4) The Annual Possession Quantity is limited to the following radionuclides (Curies/year):

Ac - 227	7.09E-02	Am - 241	6.55E+03	Am - 243	7.62E+01
Ba - 137 m	6.59E+06	C - 14	1.03E+03	Cd - 113 m	2.05E+03
Cm - 242	1.09E+01	Cm - 243	1.28E+00	Cm - 244	2.01E+01
Co - 60	1.60E+03	Cs - 134	8.15E+00	Cs - 137	6.96E+06
Eu - 152	1.27E+02	Eu - 154	1.49E+04	Eu - 155	1.02E+04
H - 3	4.02E+03	I - 129	1.34E+01	Nb - 93 m	4.98E+02
Ni - 59	1.51E+02	Ni - 63	1.40E+04	Np - 237	2.41E+01
Pa - 231	1.89E-01	Pu - 238	2.55E+02	Pu - 239	1.10E+04
Pu - 240	1.72E+03	Pu - 241	1.18E+04	Pu - 242	7.99E-02
Ra - 226	9.55E-03	Ra - 228	5.73E+00	Ru - 106	2.11E-03
Sb - 125	9.67E+02	Se - 79	1.37E+01	Sm - 151	4.50E+05
Sn - 123	8.14E+01	Sr - 90	5.90E+06	Tc - 99	6.31E+03
Th - 226	2.53E-01	Th - 232	4.42E-01	U - 232	5.77E+00
U - 233	2.96E+01	U - 234	4.02E+01	U - 235	1.48E+00
U - 236	1.21E+00	U - 238	3.77E+01	Y - 90	5.90E+06
Zr - 93	6.35E+02				

- 5) These Conditions and Limitations must be documented in an established procedure prior to starting activities granted by this approval (WAC 246-247-040(5)) and (WAC 246-247-060(5)).
- 6) If this emission unit is not in compliance with the standards in WAC 246-247-040 during construction or operation, the department reserves the right to require modifications to bring it into compliance (WAC 246-247-060-(2)(d)).
- 7) The facility shall notify the department seven days in advance of any planned pre-operational testing of the emission unit's control, monitoring or containment systems. The department reserves the right to observe such tests (WAC 246-247-060(4)).
- 8) The facility must be able to demonstrate that it has a quality assurance program compatible with applicable national standards (WAC 246-247-075(6)).

- 9) The department retains the right to conduct stack sampling, environmental monitoring or other testing around this unit to assure compliance. If directed by the department, the facility must make provision for such testing (WAC 246-247-075(9) and (10)).
- 10) The facility must be able to demonstrate that workers associated with this emission unit are trained in the use and maintenance of control and monitoring systems, and in the performance of associated tests and emergency procedures (WAC 246-247-075(12)).
- 11) The facility must be able to demonstrate the reliability and accuracy of emissions data and other test results from this emission unit (WAC 246-247-075(13)).
- 12) The department reserves the right to inspect and audit all construction activities, equipment, operations, documents, data and other records related to compliance with the requirements of this chapter (WAC 246-247-080(1)).
- 13) The department may require an ALARACT demonstration at any time (WAC 246-247-080(1)).
- 14) The facility must meet all reporting and record keeping requirements of 40 CFR 61, Subpart H (WAC 246-247-080(2)).
- 15) The facility shall report all measured or calculated emissions annually (WAC 246-247-080(3)).
- 16) The facility shall report to the department within 24 hours, any unexpected release of radioactivity, shutdown or other condition that, if allowed to persist, or lasts more than four hours, would result in the emission of radionuclides in excess of any standards or limitation in the license. Applicable standards (WAC 246-247-040) include unit specific emission limits (paragraph 5), the offsite dose standard (paragraph 1), BARCT (paragraph 3) or ALARACT (paragraph 4), whichever is applicable, or any limitation included in this approval (paragraph 5) (WAC 246-247-080(5)).
- 17) Prior to permanent shut down of an emission unit or completion of an activity, the permittee shall file a report of closure with the Department of Health. The report of closure shall include the date of the shutdown and indicate whether, despite cessation of operation, there is still a potential for radioactive air emissions and a need for any active or passive ventilation system with emission control and/or monitoring devices. An emission unit or activity will not be considered permanently shut down or completed until a report of closure is received and approved by Health.

Once an emission unit is permanently shut down or an activity is completed, thereby rendering existing permit terms and conditions irrelevant, the permittee shall not be required, after the shutdown or completion, to meet any monitoring, record keeping, and reporting, requirements which are no longer applicable for that emission unit or activity.

All records, relating to the shut down emission unit or completion of an activity, generated while the emission unit or activity was in operation, shall be kept in accordance with (WAC 246-247-080(8)). (WAC 246-247-080(6))

- 18) The facility shall maintain readily (promptly) retrievable storage areas (on site) for all records and documents related to, and which may help establish compliance with, the requirements of this chapter. The facility shall keep these records available for department inspection for at least five years (WAC 246-247-080(8)).
- 19) The facility shall make available, in timely manner, all documents requested by the department for review. The facility shall allow the department to review documents in advance of an inspection. The facility shall allow access to classified documents by representatives of the department with the

appropriate security clearance and a demonstrable need-to-know (WAC 246-247-080(10)).

- 20) The facility shall ensure all emissions units are fully accessible to department inspectors. In the event the hazards associated with accessibility to a unit require training and/or restriction or requirements for entry, the facility owner or operator shall inform the department, prior to arrival, of those restrictions or requirements. The owner or operator shall be responsible for providing the necessary training, escorts, and support services to allow the department to inspect the facility. At a minimum for unannounced inspections, such requirements or restrictions must be told to inspectors to provide an opportunity for inspectors to meet those requirements prior to the inspection (WAC 246-247-080(9)).
- 21) Prior to operation of the exhauster all exhaust duct connections shall be checked to ensure there is no air in-leakage. The duct shall be pressure tested in accordance with the requirements of AG-1 Section SA.
- 22) Monthly checks shall be performed on the exhaust duct to ensure there is no deterioration of the ductwork or leakage at the connection points.
- 23) HEPA filters shall be individually tested, annually, to the requirements of ASME N510, and shall have a minimum efficiency of 99.95%.
- 24) Within one year of initial use of the exhauster the emission unit monitoring system shall have the following activities performed:
 - a. Inspect pitot tube systems for leaks, at least annually.
 - b. Inspect nozzles for alignment, presence of deposits, damage to sharp-edged nozzles, or other potentially degrading factors (corrosion, physical damage, etc) at least annually.
 - c. Check transport lines and if visible deposits are presents perform cleaning, at least annually.
 - d. Checks to ensure the tightness of all fittings and connections as well as a leak test of the sample system, at least annually.
 - e. Inspect rotameters of sampling systems for presence of foreign matter at the start of each sampling period.
 - f. Check the response of stack flow rate monitoring and control system at least quarterly.
 - g. A functional/calibration check of monitoring system instrumentation shall be performed at least annually.
 - h. USDOE shall provide to WDOH for review and approval copies of the procedures used to perform the above activities.
- 25) The following information will be tracked on a WDOH approved log:
 - a. Single Shell Tank being saltwell pumped;
 - b. Exhauster being used;
 - c. Hours of operations.